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TEXAS State Journal of Medicine

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Editorial Offices, 700 Guadalupe Street, Austin, Texas
Publication Offices, 1114 West Daggett Street, Fort Worth, Texas
Postmaster: Send All Notices on Form 3578-P to 700 Guadalupe Street, Austin, Texas
Entered as Second Class Matter July 1, 1905, at the Postoffice at Fort Worth, Texas, under act of March 3, 1879.
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Vol. XLIV No. 8 Austin, Texas, December, 1948 $3.00 Yearly

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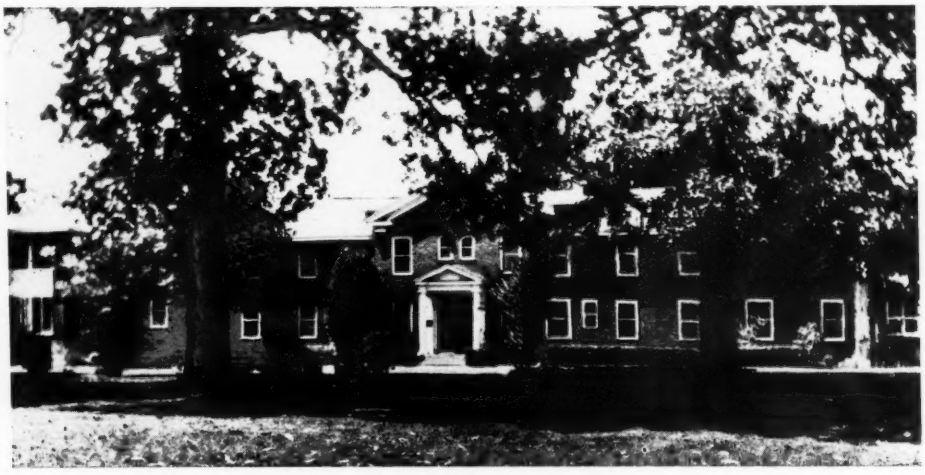

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Vol. XLIV **December, 1948** **No. 8**

DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION AND PUBLIC HEALTH IN TEXAS

Medical Department Shortage in the Armed Forces.—"One of the most critical shortages in our entire military establishment is that facing the Army Medical Department," is a statement from the Office of the Surgeon General of the Department of the Army in a recent pamphlet entitled "A Program to Meet the Urgent Manpower Requirements of the Army Medical Department."

This shortage and that which exists in the medical departments of the Air Force and Navy have been emphasized in editorials appearing in *The Journal of the American Medical Association* and other medical periodicals and was highlighted at various conferences and meetings held preceding and during the interim session of the American Medical Association at St. Louis the early part of this month. It was in an effort to prevent such a shortage that the House of Delegates of the A.M.A. at the annual session in June of this year passed the following resolution:

"*Resolved,* that the state and county medical societies be urged by the action of the House of Delegates of the American Medical Association to exert every effort in their communities to insure that a sufficient number of available physicians be encouraged to volunteer to serve their nation during this period of emergency."

The Army Medical Department points out that the gravity of this shortage stems from the fact that only highly trained professional people can supply this demand and that physicians, dentists, and nurses are especially needed, but that other Army Medical Department personnel is also urgently required. If such a shortage were allowed to develop, it would become a serious threat to the national defense program, as it is provided in the Selective Service Act of 1948 that "no person shall be inducted until adequate provision shall have been made for medical care."

Many of the men who served during World War II have been bitter in their criticism of the manner in which members of the medical profession were utilized, and some of these faults were so obvious that military leaders have already taken steps to bring about their correction. Some of the main objections related to the employment of doctors and dentists in work that was administrative rather than professional and to the wastage of physicians by maintaining in close contact medical installations of the Army, the Navy, and the Air Forces with complete staffs of specialists who, in many instances, did not have enough real work to occupy their time. These three military services have been endeavoring to cooperate and trying to overcome the objections mentioned.

As a result of worldwide surveys of professionally trained men in the armed forces made by the Inspector General's department, it has been decided that Medical Service Corp officers will be used wherever possible to replace physicians and dentists in nonprofessional positions. There has also been a definite effort on the part of the armed services to abolish waste of professional personnel so far as possible by com-

bining certain medical activities and eliminating others. In the Canal Zone and in other military establishments existing medical facilities are being used to serve members of the three divisions of the armed forces. An announcement has been made that this effort will be continued and expanded.

The suggestion that civilian physicians be employed on a part-time basis by the armed forces and remunerated as contract physicians for the aid they give as physicians in the care of military personnel has been considered favorably by the Army, and we are able to announce that physicians who wish to participate and to whom the income is not the significant factor might do well to communicate with the Surgeon General of the United States Army at Washington, D. C., as to the possibility of offering their services. The Army and Navy and Air Force are further cooperating in an endeavor to economize their personnel by using air evacuation as a replacement for ship evacuation of the wounded, thus reducing the number of attending medical personnel needed to man hospital shops which would otherwise be utilized.

It has been pointed out that the procurement programs of the Army and Navy have fallen far short of producing the required professional personnel and that unless the rate of procurement of officers is rapidly and substantially increased and maintained President Truman may conceivably insist on a draft of doctors, a provision that Congress did not include in the selective service act. Most young men who have given military service are not inclined to volunteer, but there are thousands of young men who were educated at government expense in the Army Specialized Training and Navy V-12 programs and who did not render actual military service, who owe an obligation to the government and to the people of the United States. It is these and other patriotic American physicians who must heed the call to voluntary military service if the needs of the armed forces are to be met without a special draft of doctors.

Quantity and Cost of Medical Care.—That there is no grave shortage of physicians in the United States and that the quantity of medical care available to the American public is more adequate and the cost of this care less expensive than certain propagandists have tried to make the people of this nation believe, are logical conclusions which may be drawn from a series of bulletins prepared by the Bureau of Medical Economic Research of the American Medical Association under the direction of Frank G. Dickinson, Ph. D. These and other conclusions and the summary of the results obtained in the study carried on by this bureau are brought out in a recent letter from Dr. Dickinson to Dr. James C. Sargent, chairman of the A.M.A. Council on National Emergency Medical Service.

Approximately 4 per cent of the consumer budget of the nation is for medical care, leaving 96 per cent for other than medical care. The American public spends 50 per cent more for alcoholic beverages than for medical care, also 50 per cent more for recreation. This is the decision of 147,000,000 citizens living in a free society. The total consumer expenditures for various medical care items has declined slightly; the percentage spent for physicians has declined sharply, Dr. Dickinson concluded.

In 1929, 32 cents of the dollar spent for medical care, on the average, went to physicians, and in 1947 it was 25 cents out of a dollar. For dentists the figure fell from 16 to 14 cents. Increasingly American people are offered opportunity to normalize expenditures for medical care and approach 4 per cent, the national average, by paying monthly premiums to various insurance plans, chiefly American Hospital Association and American Medical Association sponsored plans. People are getting much more today for the medical care dollar. Life expectancy at birth has changed from 49 years in 1900 to 67 in 1947. This is part of the triumphant story of medical progress.

If the price index of an economic good or service in a given year is high in relation to the general price index for that year, economists reason that the supply of the goods or service is short, or demand excessive, or both. On the other hand, if the price index is low in relation to the general price index, the supply is great, the demand weak, or both.

Prices of medical care are part of the prices used in computing the Consumers Price Index of the U. S. Bureau of Labor Statistics. In 1947 the medical care index was 131.6; the general price index 159.2. These figures are computed by using the 1935-1939 prices as 100. Hence the smaller rise in medical care prices strongly indicates to an economist that the supply of medical care materials and personnel must have been relatively great in 1947 or the demand moderate or both. Other factors enter in but the favorable behavior of medical care prices with reference to prices of all goods and services suggests no grave shortage of physisians in 1947, according to the A.M.A. report.

The quantity of medical care is dependent

on more than the number of physicians available but includes in addition x-ray and laboratory technicians, nurses, and others who together with physicians form the medical care team. The quantity of care, however, has increased faster than the supply of physicians. Because of these technical assistants and technological improvements in medicine and transportation, 1,000 physicians in 1948 can provide more medical care than in a decade ago.

The number of physicians in the United States has increased 17 per cent since 1940 while the population has increased 12 per cent, and since 1940 the population growth has been unusually high. It is difficult to be precise about the increase in the quantity of medical care during the last decade. Indications are that the increase has been somewhat more than four-fifths. This would indicate that contrary to some propagandists, there is not a phenomenal shortage of physicians or of medical care in the aggregate, Dr. Dickinson indicated.

During World War II about 60 per cent of the physicians remained civilians and took care of the 91 per cent of the people who stayed civilian. The population per physician increased about 50 per cent. In spite of this, 1942 was a banner year in the history of American health.

In the "Ewing Report" on the shortage of physicians based on the so-called "twelve best states" method, 150 physicians per 100,000 population is used as the standard of adequacy. This was the ratio in the "twelve best states" in 1940 and was set by Mr. Ewing as the goal for 1960 for the entire country. By this type of reasoning there was a shortage of 38,000 doctors of medicine in 1940 and on the same basis there will be a shortage of 42,000 in 1960. Following this process of statistical determination applied to all occupations, it appears that the great shortage in the United States in 1940 was a shortage of 60,000,000 people. The use of the "twelve best states" is obviously a pseudoscientific measure of shortages.

From the standpoint of medical care the nation is in better condition than at the outbreak of World War II. (1) We have had the experience of World War II. (2) The supply of physicians has increased faster than the population. (3) The supply of physicians has been adequate to care for the phenomenal birth rate which reached a peak in December, 1946. (4) In general, the supply and distribution of hospitals is better.

The foregoing statements from the summary by Dr. Dickinson are the results of painstaking research and statistical studies carried on in the offices of the American Medical Association and should be of value to the physician as he brings to the attention of his patients and others with whom he comes in contact the contributions American medicine has made and the need for maintaining the high standards of medical care with which this country has been blessed through private enterprise and the free choice of physicians.

Medical Information and Lay Periodicals.—An increasing number of articles pertaining to medicine and its related fields have appeared in numerous magazines and other periodicals during the past several years.

A majority of these articles are prepared for lay consumption and are intended as "interpretations" of scientific material. The objectives of these interpretations are many and should be considered from the viewpoint of the public, the editor, the writer, and members of the medical profession.

During the pre-war depression, and as early as 1930, the people of this nation found it necessary to do everything possible to prevent illness of members of the family and thereby preserve a portion of the meager family incomes. The subsequent recognition on the part of the public of its lack of knowledge in matters of health, hygiene, care of the sick, and the scientific factors involved led to a desire for enlightenment. This desire for knowledge created a demand which was readily recognized by many sources of supply.

In response to the law of "supply and demand" many magazine editors and publishers adjusted the editorial range of their publications to include articles dealing with various phases of medicine and related subjects. The popularity of this type of reading matter with the lay public resulted in a lucrative field of work for those who wished to submit articles of this nature for publication.

It is a noticeable fact that the reading public continues to provide an active market for those magazines and other publications which include this type of material.

It is not the purpose of the medical profession to discredit the intentions or efforts of those who are providing information for the use of the public, especially those who strive to raise the standards of the people of the nation through sound principles of health education. It is, however, the desire of the medical profession that the information which has such easy access to millions of homes throughout the nations should be accurate and from reliable sources.

During the past ten years the desire for

accuracy on the part of editors, publishers, and writers has resulted in closer cooperation with the medical profession. Many magazine publishers are requesting that qualified physicians verify the accuracy of information contained in articles dealing with medical science before those articles can be accepted for publication.

This recognition of responsibility to their readers is commendable and will undoubtedly prevent many ill effects from poorly timed releases which contain only partial information or half-truths.

Only a small percentage of the population is aware that the medical profession has created a magazine for the layman which should be just as important to American homes as *The Journal of the American Medical Association* is to the office of the practicing physician. This magazine, *Hygeia,* is published monthly by the American Medical Association, at no little expense, to serve as an authentic interpretation of medical subjects for those who need and wish to be properly informed in everyday matters of medical science and its latest developments.

Every physician will do well to encourage a wide distribution of *Hygeia* among the homes of his patients, the schools of his community, and the public libraries in his immediate vicinity.

News releases containing reliable information are prepared by the American Medical Association and distributed by the thousands each week to newspapers over the nation. In this manner, millions of readers gain concise, useful information on medical science regularly. An occasional comment by telephone, or in person, to the editor of any newspaper carrying such items would assure him of the fact that members of the medical profession are aware of his effort to promote the welfare of his subscribers who are, after all, the patients of the physicians who practice within the range of his circulation.

Physicians should become aware of the vast amount of medical information or misinformation which the public is reading every day and should assist their patients in the choice of literature which contains authentic medical information.

Local Committees for the Annual Session are mapping strategy which they hope will make the 1949 meeting one of the best ever held. A number of the committees are already engaged in making arrangements for the session, and others are working out plans which will not be activated until nearly time for the meeting to begin May 3.

The "commanding general" in San Antonio for all arrangements is Dr. J. L. Cochran, chairman of the Committee on General Arrangements for the Annual Session. Members of his committee are Drs. John L. Matthews, W. W. Bondurant, Jr., B. F. Stout, L. B. Jackson, T. A. Pressly, J. Manning Venable, T. H. Sharp, and Walter G. Stuck.

The chairmen of the local committees cooperating with the above-named committee are as follows:

CHAIRMEN OF LOCAL COMMITTEES

Hotels.—M. A. Childers.
Information.—W. S. Luedemann.
Finance.—Wilber F. Robertson.
Memorial.—J. A. McIntosh.
Clinical Luncheon.—Carl G. Giesecke.
Alumni and Fraternity.—Daniel D. Altgelt.
Reception.—C. F. Lehmann.
Golf.—Omer Roan.
Transportation.—S. Perry Post.
Scientific Exhibits.—Lawrence B. Reppert.
Technical Exhibits.—Pat Nixon, Jr.
Halls and Lanterns.—Albert W. Hartman.
Publicity.—R. A. Miller.
Woman Physicians.—Mildred Ward.

The Hotels Committee has announced that all reservations will be handled through the committee. Requests for accommodations should be sent to Dr. M. A. Childers, Alamo National Bank Building, San Antonio, with a listing of at least three hotels in the order of preference. Confirmations will be made by the hotels. Each member of the Association planning to attend the annual session will be responsible for securing his own hotel reservation through the Hotels Committee. Additional information concerning hotels and the procedure to be followed in obtaining reservations will appear in the January issue of the JOURNAL.

In choosing the most appropriate hotel at which to stay during the annual session, physicians should keep in mind that general meetings, exhibits, and the Sections on General Practice, Medicine, and Pediatrics will be housed in the Municipal Auditorium; Sections on Surgery and Obstetrics and Gynecology will meet at the Plaza Hotel; the Section on Eye, Ear, Nose, and Throat will convene at the St. Anthony Hotel; and the House of Delegates and the Sections on Radiology and Physical Medicine, Public Health, and Clinical Pathology will be held at the Gunter Hotel. Clinical luncheons and meetings of related societies on the Monday preceding the annual session have been assigned to conform insofar as possible to the section assignments, so that physicians particularly interested in a specific field can confine their activities primarily to a central location. The Woman's Auxiliary will have its headquarters at the Menger Hotel.

Members wishing to offer contributions to the scientific program are urged to contact

the appropriate section officers immediately, since the program will be closed at the mid-January meeting of the Council on Scientific Work. Names of the section officers appear on page 279 of the August, 1948, JOURNAL.

Scientific Exhibits at the 1949 Annual Session will have more space than has been available in recent years, and because a sizable group of representative exhibits is anticipated, the practice of awarding a certificate of merit for the best exhibit submitted by an individual and another for the best exhibit submitted by an institution is being revived.

Dr. X. R. Hyde, 906-908 Medical Arts Building, Fort Worth, is again serving as chairman of the Committee on Scientific Exhibits of the State Medical Association, with Dr. Lawrence B. Reppert, San Antonio, and Dr. Glenn D. Carlson, Dallas, as other members. All applications for exhibit space must be sent to Dr. Hyde no later than March 20. Motion picture films cannot be accepted for exhibit unless approved by a reviewing committee of the State Medical Association, and they should be forwarded to the Association, 700 Guadalupe Street, Austin, no later than March 1.

Renewal of the merit awards and the promise of almost unlimited space for exhibits in the Municipal Auditorium at San Antonio should be incentive enough for those interested in scientific exhibits. The committee is eager to hear from anyone who has or will prepare an exhibit appropriate for display at the annual session in May.

The International Post-Graduate Medical Assembly of Southwest Texas, scheduled to convene January 25-27 at the Municipal Auditorium in San Antonio, will present sixteen distinguished speakers on a variety of up-to-the-minute medical subjects. The speakers who will participate are the following:

DR. F. VINCENT ASKEY, Instructor in Surgery, University of Southern California Medical School, Los Angeles.

DR. CLARKE H. BARNACLE, Assistant Professor of Psychiatry, University of Colorado, Denver.

DR. SIDNEY FARBER, Professor of Pathology, Harvard Medical School, Boston.

DR. RAY F. FARQUHARSON, Professor of Medicine, University of Toronto, Toronto.

DR. RALPH A. FENTON, Professor Emeritus of Otolaryngology, University of Oregon Medical School, Portland.

DR. JACK S. GUYTON, Associate Professor of Ophtholmology, Johns Hopkins University School of Medicine, Baltimore.

DR. F. W. HARTMAN, Pathologist-in-Chief and Director of Laboratories, Henry Ford Hospital, Detroit.

DR. C. HOWARD HATCHER, Associate Professor of Surgery, University of Chicago Medical School, Chicago.

DR. LEON O. JACOBSON, Associate Professor of Medicine, University of Chicago Division of Biological Science, Chicago.

DR. ROBERT R. LINTON, Assistant Clinical Professor of Surgery, Harvard Medical School, Boston.

DR. JESUS S. LOZOYA, Chief of the Department of General Surgery, Children's Hospital, Mexico, D. F.

DR. JAMES L. POPPEN, Neurosurgeon, Lahey Clinic, Boston.

DR. JONATHAN E. RHOADS, Associate Professor, University of Pennsylvania School of Medicine, Philadelphia.

DR. JAMES C. SARGENT, Professor and Director of Division of Urology, Marquette University School of Medicine, Milwaukee.

DR. PAUL C. SWENSON, Professor of Radiology, Jefferson Medical College, Philadelphia.

DR. RICHARD TELINDE, Professor of Gynecology, Johns Hopkins University School of Medicine, Baltimore.

In addition to lectures by the guest physicians, there will be luncheons with question and answer periods, a clinical-pathological conference, and scientific and commercial exhibits. Entertainment will include a stag party and ranch style dinner and a dinner dance. Separate entertainment is planned for wives of physicians attending the assembly meetings.

The registration fee of $20 covers all scientific features of the meeting, luncheons, and the stag party. Military personnel on active duty will receive the same benefits for $10. Registration may be completed in advance by sending a check to the assembly, P. O. Box 2445, San Antonio.

Such postgraduate conferences as that to be held in San Antonio have long since proved their value to and popularity among Texas physicians. There is no question but that doctors who attend the assembly session will find a well-planned program of education and entertainment.

The Journal Volume Closes with this issue in accordance with the decision of the Board of Trustees, approved by the House of Delegates, that the publication year for the JOURNAL should be identical with the membership year and fiscal year of the State Medical Association. Beginning with 1949, the JOURNAL volume will begin with the January issue and end with the December issue.

Although the current volume will be short (only eight issues) and cannot be compared satisfactorily with the preceding volume, it may be well for the record to indicate that Volume XLIV contained a total of 1,160 pages, of which 508 pages were devoted to advertising and 652 to reading matter. There were 54 pages of editorials, 351½ pages of original articles, and 246½ pages of miscellaneous material. Ninety original articles were published.

"Buy Christmas Seals." To almost all the general public, and certainly to physicians, that slogan carries such a specific and important connotation that further explanation of it is almost superfluous.

"Buy Christmas Seals" means "Buy better health through fighting tuberculosis."

That this definition is based on more than a vain hope is the fact that since 1904, the whole program of the National Tuberculosis Association, which is financed primarily by the sale of Christmas seals, is estimated to have helped reduce the tuberculosis death rate by 80 per cent. Despite this record, tuberculosis still kills more people between the ages of 15 and 44 than any other disease. The fight must continue and hundreds of thousands of Christmas seals must be purchased to help win that fight.

Every penny spent for a Christmas seal is spent wisely. In Texas, 82 per cent of the funds raised by a local association this year will be retained for use in its own territory, 13 per cent will be used for the program of the Texas Tuberculosis Association, and only 5 per cent will be sent to the national organization. At each level, physicians assist competent laymen in planning and executing a program designed to stamp out tuberculosis.

Members of the State Medical Association, their families, and their friends need only a reminder: "Buy Christmas Seals."

National Diabetes Week, December 6-12, has focused attention on a disease the importance of which has not, perhaps, been generally recognized. About 1,000,000 persons suffering from diabetes in the United States have been identified, but surveys have indicated that there are probably 1,000,000 more persons with diabetes who are unknown, and the number of sufferers is steadily increasing. Diabetes is a major chronic disease which ranks eighth among the causes of death. In numbers affected, it is outranked only by heart disease and its related blood vessel and kidney disorders, and by cancer and rheumatism. Yet diabetes is unique among the diseases common in middle and later life in that insulin provides a specific means of control.

The American Diabetes Association, a nonprofit organization dependent upon financial support from membership dues and donations, was founded in 1940. Made up largely of physicians, the association now includes 1,000 doctors devoted to improving the treatment of diabetes, bringing the newest knowledge of the disease to all physicians, encouraging and supporting research in the field, and increasing knowledge of diabetes among the general public.

The importance of discovering diabetes early when it is mild and when treatment which will curtail the risk of crippling complications and the threat to life can be instituted has been stressed. In addition, programs of education directed at both the medical profession and the general public are needed so that the best methods of managing diabetes will be more widely used and preventive measures will be followed routinely. Research aimed at discovering better insulin for control of diabetes and the causes of premature aging in diabetes is necessary.

Realization by the physician that diabetes presents a challenge which he can help to meet in his daily practice and by financial and moral support of the American Diabetes Association and its affiliated organizations is the first step toward reducing the destruction for which diabetes is currently responsible.

State Medical Association Dues for the coming year are payable now, and will become delinquent January 1. Physicians are urged to settle with their county medical society secretaries at once so that state dues can be forwarded to the central office promptly.

Perhaps it should be pointed out again that the House of Delegates at the 1948 annual session voted to raise the dues from $20 to $35 to cover mounting expenses. Delegates from all the component county societies who were present at the meeting seemed overwhelmingly in favor of some sort of advance in dues, recognizing the general increase in costs of all kinds and the necessity for enlarging the activities of the State Medical Association. Such arguments as were brought to the floor of the House had to do with how much the dues should be raised, not whether the dues should be raised or left unchanged. The decision finally reached was to set the 1949 dues at the lowest amount suggested, with the understanding that the Board of Trustees would study the situation carefully and make further recommendations should additional financial support be necessary.

Checks should be made payable to the

State Medical Association of Texas and mailed to 700 Guadalupe Street, Austin. Secretaries of county medical societies are requested not to hold up payments until the dues of all members are in, although attempts should be made to secure as complete immediate response as possible.

CURRENT EDITORIAL COMMENT*

Tuberculosis, a Medical Problem. — It is agreed by all authorities on tuberculosis and its control that the general practitioners' offices and the general hospitals are the great neglected field for case finding.

It has been notoriously difficult to interest physicians in tuberculosis. It is not known how much of this lack of interest is due to the lack of knowledge concerning the more modern diagnosis and treatment of the disease, or how much can be laid at the door of medical schools and medical organizations for their failure in the past to devote the necessary time and effort to seeing that doctors are kept abreast of the times. Nevertheless, there is a definite lack of interest in the subject of tuberculosis by the medical profession at large.

The Committee on Tuberculosis of the State Medical Association adopted fifteen major objectives, with a hope of assisting in the improvement of the tuberculosis situation in Texas. The committee soon realized that without the support of a great majority of the individual physicians, its efforts would be handicapped from the start and little or no progress would be made.

In order to stimulate further interest in the subject of tuberculosis control, members of the committee contacted the officers of each county medical society in the state and asked their cooperation by appointing a tuberculosis committee within their society. The response was gratifying in that seventy-three county societies now have tuberculosis committees. The tuberculosis committee of each society was asked to take the lead, from a medical standpoint, in an effort to better the tuberculosis situation within its own county area.

The Committee on Tuberculosis also invited the attention of the superintendents and chiefs-of-staff of every hospital in Texas to the importance of routine chest roentgenograms of all patients admitted. It was pointed out that this procedure is necessary in the prevention of the spread of tuberculosis within the hospitals, among the attendants and employees, and that it provides an added routine aid to diagnosis, not only of tuberculosis but of some seventy-odd other diseases and conditions. The response to the latter plea has not been satisfactory.

The Committee on Tuberculosis will continue in its effort to create wider interest in tuberculosis control among the physicians of Texas, as well as officials of the hospitals of Texas. The committee will also concern itself with the study and proposal of new laws governing the state tuberculosis sanatoriums and raising their standards of treatment. An effort will be made to secure such efficiency in these sanatoriums that they will be recognized for national affiliation, qualified to give specialized training to physicians and nurses so that there may be an increase in the number of such specially trained personnel for the treatment of tuberculosis.

The committee, therefore, makes a plea to each physician of the state to lend his interest and cooperation in case finding, both in his own practice and in the general hospitals of the state. Tuberculosis can be controlled, but not without the individual help of each physician.

C. M. HENDRICKS, M. D., Chairman,
Committee on Tuberculosis,
State Medical Association of Texas,
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*This department of the JOURNAL presents editorial comments on current items pertaining to the science, art and practice of medicine, contributed by members of the State Medical Association and scientists closely associated with the medical profession of Texas. Invitation is hereby extended to any member of the State Medical Association of Texas to submit such discussions for this department. The discussions should not be more than 500 words in length.

PENICILLIN ALLERGY

Persons who are to be treated with penicillin can be given a skin test which indicates whether they may have allergic reactions to the drug, say five researchers from the Dermatologic and Medical Services of the Mount Sinai Hospital, New York. Writing in the October 30 issue of *The Journal of American Medical Association*, Samuel M. Peck, M. D., Sheppard Siegal, M. D., Arthur W. Glick, M. D., Abner Kurtin, M. D., and Rose Bergamini, B. A., say that the test is a guide to treatment even in cases in which penicillin therapy must be started immediately.

The researchers recommend using the delayed reaction type of skin test, in which penicillin is injected just beneath the outer layer of skin. Reddening of the injection area forty-eight hours later indicates sensitivity to penicillin.

In a group of 276 adults who had never been treated with penicillin, 15, or 5.4 per cent, reacted positively to the penicillin skin test given by the researchers.

Patients who are allergic to penicillin can be desensitized by giving them gradually increasing doses of the drug over a period of several weeks, the researchers found. The desensitization is not always permanent, however.

ORIGINAL ARTICLES

TUBERCULOSIS AND THE GENERAL PRACTITIONER

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Tuberculosis is a medical enigma. Since 1882, when Robert Koch announced his discovery of the tubercle bacillus, this disease has received profound laboratory, pathologic, and clinical investigation. As a result there is little that is not known about the tubercle and its treacherous manifestations. Yet tuberculosis remains today the most devastating of chronic infectious diseases.

It is true that progress has been made in the epidemiology and mortality of tuberculosis in America. In forty-five years, tuberculosis has dropped from the position as the leading cause of death to that of seventh in mortality. This represents an 80 per cent reduction. In spite of this record tuberculosis remains the leading cause of death in the age group of from 15 to 35, normally the healthiest years of life. Unlike cancer, for example, it attacks the young, the strong, the productive years of life. It is no respecter of racial or financial barriers, but it does flourish in poverty, in the undernourished, in the tenements of America.

This is the disease that probably causes more economic loss to America than any other. Tuberculosis is a chronic incapacitating disease which makes its victim, his family, and his community suffer economic and social hardships impossible to estimate on any accurate basis. This is the disease that strikes fear into the heart of any man. People fear tuberculosis not only as a disease but as an economic hazard. Furthermore, they are aware that tuberculosis is a disease that is poorly handled medically and sociologically in too many places in America.

Tuberculosis has been the cause of more quackery than almost any other disease. Every conceivable thing has at one time or another been advanced as a possible cure. Even scientists and clinicians have used nearly every imaginable drug experimentally, and still clutch to their hearts every new "wonder drug" that alleviates other diseases, with the hope that it will also defeat the tubercle. Such experimentation is the basis of progress. However, the lay press and so-called "science writers" continue to add to the confusion by prematurely publishing stories about each astounding new "cure" for tuberculosis. Is it any wonder that tuberculosis is an enigma to the public as well as to the physician?

It would probably be well to review our knowledge of tuberculosis, its epidemiology, its diagnosis, and its treatment, for there are ways in which this disease can be controlled, and there are ways in which it can be cured. The general practitioner, the family doctor, has been and must remain the key figure in the fight against this disease. Without his cooperation in public education, in control programs, in case-finding programs, and in treatment, tuberculosis will continue its course of destruction.

EPIDEMIOLOGY

What do we know about tuberculosis? We know that it is infectious and a communicable disease. We know that 50 per cent of all cases can be traced directly to a tuberculous contact. We also know that every open case of tuberculosis may directly infect an average of nine other persons. In short, we know that every open case of the disease is a public menace, but we do not take advantage of this knowledge. In Texas 68 per cent of the tuberculous deaths occur outside institutions. Laws provide for the isolation or segregation of many more contagious, but certainly less serious, diseases. Segregation of the open case of tuberculosis should be one of the weapons against the spread of this disease.

We also know that tuberculosis is an insidious disease that may reach an advanced stage with little symptomatology. National surveys[1] have shown that among patients admitted to sanatoriums at the present time, 60 per cent of the cases are far advanced, 30 per cent moderately advanced, and only 10 per cent minimal. Obviously, these patients should have been diagnosed and hospitalized earlier. An occasional case picked up in a routine physical examination will not greatly lower the mortality rate of this disease. There must be some way to find early and late cases in mass. Fortunately we have such a measure in the mass roentgen-ray survey. Mass surveys in industry, in colleges,[3] schools, in all hospital admissions,[6] and among the general public, it is believed, would reverse the ratio of sanatorium admissions to 5 per cent far advanced, 25 per cent moderately advanced, and 70 per cent minimal. We should accept and demand mass roentgen-ray surveys as a case-finding program.

We know that a tuberculous cavity is extremely dangerous. It naturally is the great-

Read before the Section on General Practice, State Medical Association of Texas, Annual Session, Houston, April 27, 1948.

est source of infection and is, therefore, dangerous to all contacts of the patient. Max Pinner[5] has again reminded that without adequate treatment 50 per cent of patients with cavities will be dead in two years, and a vast majority will be dead in five years. It behooves us to find the cases in an earlier stage of the disease and to institute adequate treatment in all cases.

We know that adequate treatment and adequate public health protection require a sufficient number of hospital or sanatorium beds. There should be two and one-half beds per death from the disease in any particular census area. In Texas we are woefully below standard in this respect. In 1947, with 2,614 deaths, there were only 2,000 beds. Likewise in Texas the state sanatoriums operate under laws adopted in 1912, with limitation of the period of hospitalization to nine months and with restriction of patients to the minimal or moderately advanced groups and exclusion of the far-advanced case, the latter obviously the greatest menace.

The State Medical Association now has a standing Committee on Tuberculosis, which has undertaken an extensive program for the betterment of the laws and facilities pertaining to the tuberculosis problems in Texas. This committee needs the whole-hearted cooperation of the medical profession in every city and county in the state. An adequate treatment and control program for Texas will be expensive from a monetary standpoint, but there is nothing so valuable as human life. Science has practically eliminated bovine tuberculosis in cattle and man. We should do no less with the human type of the disease.

TREATMENT

Among all the various treatments advanced the only one that has stood the test of time is rest. By this is meant bed rest with hygienic and symptomatic treatment, under which some incipient and minimal cases may effect a cure, and selective or induced rest which is obtained through the various forms of collapse therapy.

Bed rest alone has limited indications. To put a patient with an obviously open lesion to bed and tell him to stay there until he gets well borders on malpractice. Close, frequent evaluation of even the most incipient case by roentgen-ray, laboratory tests, and symptomatology, and the immediate induction of the indicated collapse measure is the control necessary. Tuberculosis is a treacherous disease and halfway measures are too often not enough.

COLLAPSE THERAPY

It is not within the scope of this paper to enter into a discussion of the various forms of collapse therapy and the indications therefor. Briefly, my indication for collapse either unilateral or bilateral is a persistent tubercle positive sputum in the minimal case, even though the lesion appears small and the symptoms are negligible or none. In the more advanced lesions, with or without cavitation, pneumothorax is attempted as soon as possible. Ninety per cent of my cases receive some form of collapse therapy.

Chest specialists are constantly being confronted with patients who refuse any form of collapse therapy because the family doctor advised against it. The advantages of successful collapse therapy far overshadow any possible risk or temporary discomfort or disfigurement to the patient. A successful collapse has the following advantages: (1) Early complete rest of the diseased area and thus an earlier cure. (2) Reversal of the sputum test, hence less likelihood of spread of the disease to others. (3) Earlier ambulation and rehabilitation. The majority of these patients can be gainfully employed while receiving pneumothorax, for instance. The economic advantages are, therefore, of great importance.

In the event pneumothorax is unsuccessful, too often there is a hesitancy on the part of the family physician or the specialist to advise a more radical collapse procedure, such as thoracoplasty. If collapse by the simple method was indicated, it is still indicated by a more radical method in the same patient. Particularly is this true in a cavity case.

Greater advance in technique and safety has been made in thoracic surgery in the last ten years than in any other branch of surgery. Thoracoplasty should no longer be looked upon as a last resort measure and one to be avoided if possible. In properly selected cases, thoracoplasty is not fraught with the danger so often ascribed to it. R. M. Lewis[4] reported a statistical survey from various chest surgeons totaling 3,045 patients in which 68.6 per cent are listed as arrested or apparently arrested (cured), with an over-all mortality of 15.06 per cent. The operative mortality is about 5 per cent even in the poor surgical risk that advanced tuberculosis affords.

The indication for thoracoplasty is a cavity or progressive disease that cannot be closed by a more simple method of collapse therapy, barring, of course, certain contra-

indications for surgery. Obviously not every case of the disease is operable, but if the physician remembers that 50 per cent of patients with cavities will be dead in two years, and an overwhelming majority in five years, he will be more likely to recommend surgical intervention.

In a series of 53 consecutive cases completed prior to July, 1947, involving 103 stages, I have had 3 operative deaths. Four other patients have subsequently died of tuberculosis, giving an over-all mortality of 15 per cent. Thirty-one (58 per cent) are now completely well and able to work. Seven of the remaining cases are apparently arrested; only 8 remain with positive sputum or progressive disease. I am confident that a majority of this series would now be dead if they had not had surgery. Of equal importance is the fact that those who are now well are no longer an economic liability and are no longer infectious to their families and associates.

CHEMOTHERAPY

It may now be said definitely that "tuberculosis is vulnerable to a chemo-therapeutic attack."[2] Feldman[2] stated that "the future possibilities for obtaining a highly potent specific substance or combination of substances are promising." Most chemical substances found experimentally to be effective against the tubercle bacillus have been too toxic for safe clinical use. An exception, of course, is streptomycin, which, while somewhat toxic, has been used successfully in a sufficient number of cases to prove its value.

The irreversible destructive changes wrought by tuberculosis make the effect of antibiotic and bacteriostatic chemicals, such as streptomycin, much more limited than in less destructive disease. Thus it is that in hard-walled cavities and long-standing fibrocaseose disease, streptomycin has little curative value. In earlier acute lesions, recent spreads, and in ulcerative lesions, such as in the larynx, the results have been remarkable in most instances. The use of streptomycin in conjunction with surgical collapse has been the means of rehabilitating many cases which would have been considered inoperable before such a combination existed. Streptomycin is not a panacea; it is a great step forward.

Even in chemotherapy it is necessary to return again to the problem of early diagnosis. The earlier the diagnosis, the less destruction, and the less destruction the easier the treatment, be it collapse therapy or chemotherapy.

SUMMARY

Tuberculosis remains today the most devastating of chronic infectious diseases. This is true in spite of the fact that we know the etiology of the disease, we know that it is communicable, we know that it can be prevented and controlled, and we know that it can be successfully treated. Early diagnosis with mass roentgen-ray surveys, segregation of the open case with adequate hospital facilities, and the prompt use of collapse therapy and chemotherapy, as indicated, will bring this treacherous disease under control.

The success of this program depends on the cooperation and the active interest of the family doctor, who, of necessity, spearheads the attack against all diseases of mankind.

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ABSTRACT OF DISCUSSION

Dr. O. N. Mayo, Brownwood: Dr. Homan has given an interesting and up-to-date discourse on tuberculosis and I commend this article to all practitioners of medicine for their thoughtful consideration.

The control of tuberculosis may well be divided into the following divisions: (1) case-finding or discovery of the disease; (2) diagnosis—active and infectious, or inactive and latent; (3) treatment—medical, surgical, or combined; and (4) prophylaxis.

In 1895 Roentgen discovered the x-ray and since that time x-ray study of the chest has become one of the most useful procedures for detecting pulmonary tuberculosis, estimating the damage done by the disease, and guiding the clinician or surgeon in the proper treatment. During World War II, mass roentgen-ray examinations with 4 by 5 inch films was adopted by the United States Army for the routine chest examination of all men and women inducted or separated from the service.

I had the opportunity while in the Army in a large induction and separation center of examining many thousands of these small films. The method has proved satisfactory and inexpensive. The medical profession should cooperate wholeheartedly with the State Health Department and the Texas Tuberculosis Association in furthering this type of examination for all persons, especially those between the ages of 15 and 35 years, in a systematic and thorough program.

By roentgen-ray examination of the chest in the induction stations of the Selective Service, more than 130,000 men and women with tuberculosis were found.

Chest surveys conducted in Minnesota, New York, and Illinois show that from 4 to 10 per cent of patients in the hospitals for the mentally ill have roentgen-ray evidence of re-infectious type tuberculosis.

The other case-finding methods must not be overlooked. Clinical and laboratory examinations must be made to confirm the diagnosis. Tuberculin testing of children and young people and also in older people should be carefully done, and the reactions carefully evaluated. It is a valuable procedure. Tuberculin testing is often helpful as a screening device in unsuspected cases and also in border line cases to confirm the roentgen-ray or other evidences.

Prophylaxis in the management of tuberculosis is important and has been responsible to a great degree for the decrease in the prevalence of this disease. Large controlled experiments are under way in which BCG is being used as an active immunization against the disease, and preliminary reports are encouraging.

The need for finding and isolating open cases of tuberculosis cannot be over emphasized. Some states require immediate segregation and isolation of all open cases as soon as diagnosed.

Dr. Homan has mentioned the shortage of sanatorium beds. The public should be aroused to demand the construction and maintenance of necessary hospitals with modern facilities for treating patients in all stages of the disease. The public must be impressed with the importance of tuberculosis as a community problem. This can be done best by soliciting their participation in local health and education programs.

HOSPITAL ADMISSIONS INCREASE

During 1947 one patient was admitted to a hospital in the continental United States every two seconds and a live baby was born in a hospital every eleven seconds, according to the twenty-seventh annual report of the Council on Medical Education and Hospitals of the American Medical Association in the August 14 issue of *The Journal of the American Medical Association*. The figures reveal that in comparison with 1946 the number of hospital beds has decreased from 1,468,714 to 1,425,222 and the number of admissions has increased from 15,153,452 to 15,829,514.

This apparent discrepancy is clarified when the average length of stay per patient in general hospitals is considered. In 1946 the average patient remained 12.9 days in a general hospital; in 1947 he was discharged after 11.4 days, a gain to the patient of a day and a half. The number of patient days has decreased from 452,400,710 to 444,288,585.

The decrease in total bed capacity is accounted for entirely in the government group of hospitals, federal hospitals alone reporting 51,282 beds less than last year. With admission to the government hospitals decreasing by nearly 394,000, admissions to civilian hospitals increased by more than 1,000,000 for the second consecutive year.

ENDOCRINOLOGY AWARD

The Ciba award of $1,200 for meritorious work in endocrinology will again be offered in 1949. This award, sponsored by Ciba Pharmaceutical Products, Inc., Summit, N. J., will be given in recognition of the accomplishment of an investigator, not over 35 years of age, in the field of clinical or preclinical endocrinology.

The winner of the award will be announced at the annual meeting of the Association for the Study of Internal Secretions, a special committee of which chooses the recipient.

THE EARLY TUBERCULOUS PULMONARY LESION AND ITS MANAGEMENT

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A great many physicians have a tendency to think of tuberculosis always as an extremely chronic disease in which the patient is subjected to a progressive infection of his lungs and from which he never quite recovers physically, mentally, or economically. Such a viewpoint is often kindled by the fact that 90 per cent of patients with tuberculosis who enter sanatoriums and hospitals in this country are in an advanced stage of the disease. Similarly, before the development of modern case-finding methods which employ the roentgen ray, 90 per cent of the diagnoses of pulmonary tuberculosis made in the private physician's office were either moderately advanced or far advanced cases. Follow-up studies on these advanced cases reveal almost uniformly that despite the best of treatment, 50 per cent of such patients are dead before they leave the sanatorium, and scarcely half the survivors last the next five years. These facts, if contemplated too narrowly, are apt to create a pessimism about the disease which is not justified. No one will deny, however, that these facts represent a deplorable state of affairs which every physician should be interested in correcting.

It was not many years ago that much emphasis was placed upon early symptoms and physical signs of pulmonary tuberculosis in an effort to discover the disease in its incipiency. Today, it is well known that little reliance can be placed upon symptoms and physical signs as a method of detecting the early lesions of pulmonary tuberculosis, particularly when these lesions are of limited extent, as most of them are. Dr. Burns Amberson of Columbia University, long a student of the early phases of phthisis, has stated that the greatest obstacle to understanding the behavior of the early lesions of pulmonary tuberculosis is their failure to sicken the host. The patient with an early and limited lesion does not come to the physician simply because he has no complaints.

The early lesions of pulmonary tuberculosis may be detected by the roentgen ray while they are still undetectable by other methods of examination. The widespread acceptance of this fact has led in recent years

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Read before the Section on Medicine, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

to tremendous enthusiasm for obtaining chest roentgenograms on large population groups such as the Army, the Navy, employees in large industries, and admissions to general hospitals, schools, and colleges. Such large scale surveys have uncovered an interesting distribution of tuberculosis in the general population in that approximately 70 to 85 per cent of the disease which is found is in the minimal stage. This picture is almost the opposite to that in hospitals and sanatoriums in this country where the incidence of minimal disease in tuberculous patients admitted is only from 10 to 20 per cent. The reason for this difference lies in the fact that patients with minimal tuberculosis are not being sent to the sanatoriums or hospitals for treatment, but there is also a strong implication that the minimal case in many instances is progressing to more advanced disease before it is considered to be in the conventional stage for sanatorium acceptance.

At this point a few clarifying definitions are in order. An *early* tuberculous pulmonary lesion is an area of tuberculous involvement which has recently made its appearance. This early disease is usually a small area of pneumonia when first detected, but it is occasionally large and may involve an entire lobe or lung. Obviously the only method by which the physician can be certain of the recency of the lesion is by having a previous normal chest roentgenogram on the same patient. In speaking of an early lesion, the entire emphasis is upon recency of chronological development. A *minimal* lesion, on the other hand, occupies a limited small area on the chest roentgenogram and does not contain a visible cavity. There is nothing in this definition which refers to the age of the lesion. A minimal lesion, therefore, can be either an old, arrested focus or an early infiltrate providing it is small enough to be classified as minimal. It is evident that the classification of minimal emphasizes only the extent of involvement and that great dissimilarity may exist as to chronological age, roentgen-ray appearance, and pathologic character. It is important to keep these definitions in mind as otherwise much confusion may result.

Much attention is being focused upon the minimal lesion as a result of its frequent appearance in the mass chest surveys which employ photofluorography and the 70 mm. microfilming techniques. Every case of minimal tuberculosis discovered by such surveys should be carefully studied to determine if the lesion is early or active, as the management of an early (active) minimal lesion and an old (inactive) minimal lesion may differ considerably.

PATHOLOGIC BEHAVIOR OF LESIONS

The pathologic alterations of the early lesion are important, and therein lies the key to its management. All early lesions are thought to have a productive tubercle with caseation at the center. The periphery of such lesions, however, is composed of exudate as a rule, and not infrequently the exudative extension of the lesion is responsible for almost the entire shadow cast on the roentgenogram. Such shadows have been described as having a soft, "cotton ball" appearance with hazy indistinct margins that gradually fade into the surrounding normal lung parenchyma. They may be single or multiple, and as a rule they are located in either an apical or subapical position.

The pathologic behavior of the early lesion after its discovery is not widely appreciated by the medical profession. Such a lesion is practically always unstable in character and should never be regarded lightly by the clinician or the roentgenologist simply because of its small size. It may possess a tendency to progress rapidly under unfavorable circumstances, and the physician should know that progression is the rule whenever he fails to institute proper treatment. Unfortunately there are many who adopt the viewpoint that most of these early lesions heal without treatment and that no more than slight restriction of activity and periodic roentgen-ray observation are required. In other words, why worry about the early lesion when there are so many advanced cases that need treatment? There is much need for an infinitely broader concept of the disease, and it should be kept in mind that advanced pulmonary tuberculosis always has a beginning, and in the majority of instances the first manifestation of the disease is the so-called small, early lesion. The physician who is fortunate enough to discover pulmonary tuberculosis in this early stage and who denies his patient prompt and effective treatment is obviously not aware of the potentialities of the disease.

TABLE 1.—*Duration of Roentgen-Ray Observation of 157 Minimal Lesions in Hospital Employees.*

Total	One Observation	Less Than 2 Yrs.	2-3 Years	3-4 Years	4-5 Years	5-10 Years	More Than 10 Years
157	14	29	16	13	12	48	25
100.0%	8.9%	18.5%	10.2%	8.3%	7.6%	30.6%	15.9%

In support of the contention that the small

early lesion is in most instances progressive in nature, I would like to call upon some experiences over an eight-year period at the University of Michigan Hospital,[3] a general hospital of about 1,000 beds. In 1932 a case-finding program was started among the employees, including professional as well as nonprofessional workers. From 1932 until 1940, some 5,500 employees and applicants had, whenever possible, serial chest roentgenograms. During this period, a total of 328 cases of pulmonary tuberculosis were uncovered, and 185 cases, or 56 per cent of the total, were in the form of minimal disease. Twenty-eight applicants were refused employment, leaving 157 employees with minimal disease who were kept under roentgen-ray observation for a median of four years. The period of observation is highly important in studying tuberculosis and is given in more detail in table 1. A comprehensive study of this group of hospital employees with minimal pulmonary tuberculosis has been made, and from the data accumulated some interesting facts were uncovered.

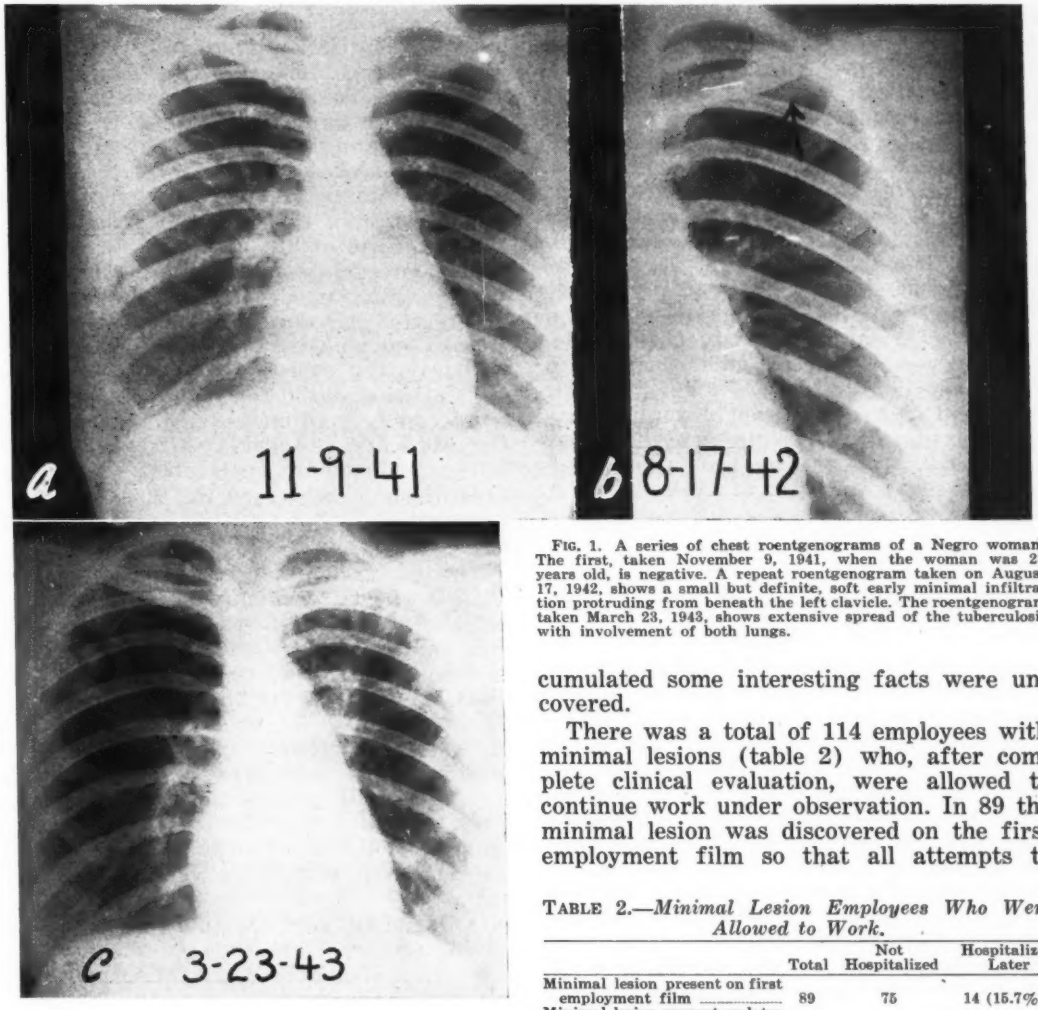

FIG. 1. A series of chest roentgenograms of a Negro woman. The first, taken November 9, 1941, when the woman was 23 years old, is negative. A repeat roentgenogram taken on August 17, 1942, shows a small but definite, soft early minimal infiltration protruding from beneath the left clavicle. The roentgenogram taken March 23, 1943, shows extensive spread of the tuberculosis with involvement of both lungs.

There was a total of 114 employees with minimal lesions (table 2) who, after complete clinical evaluation, were allowed to continue work under observation. In 89 the minimal lesion was discovered on the first employment film so that all attempts to evaluate the risk of continued employment were without any exact knowledge as to the age of the lesion. Only 16 per cent of this group had subsequently to be hospitalized because of progression of the lesion. In another group of patients, the initial employment film was normal and a tuberculous lesion appeared on a later serial roentgenogram, so that the presence of an early lesion

TABLE 2.—*Minimal Lesion Employees Who Were Allowed to Work.*

	Total	Not Hospitalized	Hospitalized Later
Minimal lesion present on first employment film	89	75	14 (15.7%)
Minimal lesion present on later employment film (early lesion)	25	10	15 (60.0%)
Total	114	85	29 (25.4%)

was undisputed. Of these patients with known early lesions, 25 were allowed to continue working under observation and 60 per cent had to be treated with bed rest at a later date because of progression of the disease. Partly as a result of this experience, the policy at the University of Michigan Hospital is to hospitalize immediately all employees with known early tuberculosis and all early suspects. With the patient on bed rest, further examinations and observation can be carried out with safety, and at the same time proper treatment is being given at a period when the probability of preventing advanced and disabling disease is high.

Dr. David Reisner of New York has recently had the opportunity of observing for as long as a ten-year period a rather impressive series of 248 patients with early lesions, all of which developed within one year of a normal chest roentgenogram.[6] His material was collected from the various tuberculosis clinics of the New York City Department of Health through routine serial chest roentgen-ray examinations of apparently healthy people, most of whom were contacts of known cases of tuberculosis. At the time tuberculosis was discovered, most of these early lesions were in the minimal stage (76 per cent for whites and 55 per cent for nonwhites). These patients with early minimal tuberculosis were then followed, and at the end of five years, the cumulative percentage of "frank progression" was found to be nearly 90 per cent for nonwhites and nearly 60 per cent for whites. By "frank progression," Dr. Reisner meant an increase in the extent of involvement from minimal into a more advanced stage, so that the above figures would not include a considerable number of patients sustaining an increase in their lesion which did not exceed the confines of minimal disease. Finally, it should be emphasized that the early lesions mentioned above progressed despite the fact that about one-third of the group received sanatorium care for six months or longer, the remainder receiving little or no treatment.

Dr. Reisner's observations serve to emphasize the point that early pulmonary tuberculosis of limited extent should be regarded and handled as active, potentially progressive disease.[7] This point is illustrated in figure 1, which is a series of chest roentgenograms of a Negro woman. The first roentgenogram, taken November 9, 1941, when the woman was 23 years old, was negative. A repeat roentgenogram on August 17, 1942, revealed a small but definite, soft early minimal infiltration protruding from beneath the left clavicle. This lesion was not regarded seriously by the clinician, and the patient was told simply "to take it easy." In a roentgenogram taken seven months later the tuberculosis was shown to have spread extensively with involvement of both lungs.

As previously emphasized, the diagnosis of the early lesion is made primarily by routine serial chest roentgenograms of healthy people. Most of the patients have no history or physical signs of disease. Their only complaint is that they have been told that a "spot" has appeared on a recent chest roentgenogram. The physician should always make certain of the tuberculin reaction, but the failure to obtain a positive test at the time of presumptive diagnosis should not interfere with further diagnostic studies and observation, all of which should ideally be carried out with the patient on bed rest. In this way, the prolonged observation which is so often essential for sound clinical judgment can be continued with safety and at the same time proper treatment is being initiated during the early phase of the disease when the return on the therapeutic investment is higher than it is apt to be at any subsequent period.

The presence of tubercle bacilli in the sputa or gastric contents can be found by repeated and careful search, including culture and guinea pig inoculation, in as high as from 50 to 75 per cent of cases of early disease. A search for the organism should therefore always be made. Failure to find the tubercle bacillus, however, should not detain the physician from instituting and continuing with prompt and thorough treatment, providing the tuberculin test and the behavior of the lesion on the roentgenogram are consistent with a diagnosis of tuberculosis.

It should be kept in mind that this discussion concerns *early* tuberculosis, a situation which should be regarded as being almost synonymous with active tuberculosis. Some of the recent policies advocated in regard to the handling of minimal tuberculosis, the age and activity of which is often unknown when it is discovered on the roentgenogram, are not altogether applicable to the early lesions.[2, 4]

TREATMENT

The need for prompt and intensive treatment coupled with prolonged follow-up observation of the early lesion has been emphasized. As a rule, the response to proper management is gratifying. Early tubercu-

losis is largely composed of exudate and is capable of undergoing resolution, at least as far as the exudative component is concerned. Such resolution must take place, however, before necrosis or caseation occurs. In the latter event, large amounts of caseous tissue containing many viable tubercle bacilli are encapsulated and retained and always constitute a more serious threat to later breakdown and dissemination of the disease. Proper treatment in the first few weeks may direct the pathologic process toward resolution rather than toward further caseation, a step which may be far more important than anything the physician can do later.[1]

The necessity for prompt and thorough treatment, then, is based upon the following facts: (1) Healing of a large portion of the lesion by resolution is possible. (2) If the lesion is small, as it usually is, the time and expense involved in treatment is greatly minimized. (3) Progression to the more advanced forms of the disease is avoidable. (4) The patient is able, after a relatively short period of treatment, to return to a useful place in society.

The actual treatment methods used will vary to a certain extent depending upon the experience of the physician, the availability of sanatorium or hospital beds, and the cooperation of the patient. It is beyond the scope of this paper to weigh the merits of the various methods advocated by different authors. Once more, experiences at the University of Michigan Hospital will be called upon to portray what can be accomplished and to stress the importance of long periods of follow-up observation in evaluating the results of treatment.

Seventy-two employees with minimal pulmonary tuberculosis, most of which was early disease, were treated with strict bed rest.[3] In nearly 50 per cent, bed rest alone was adequate to arrest the disease. In the remaining 50 per cent, some form of collapse therapy was used because the lesion did not present a tendency to heal satisfactorily or because in a few instances progression was observed despite bed rest. The policy of always using temporary phrenic paralysis as the first collapse procedure was carried out with amazing consistency over the eight year period of this study. Those lesions which revealed a tendency to progress usually did so within a matter of weeks after initiating bed rest, and in those instances phrenic paralysis was promptly instituted so that little or no time was lost.

Slightly less than 10 per cent of the patients so handled came to pneumothorax, either because of continued progression of the lesion or because the surgeon was unable to paralyze the diaphragm. In one instance the patient developed bronchial disease in the face of both phrenic paralysis and pneumothorax, an empyema ensued, and thoracoplasty eventually had to be done before the disease was controlled. Follow-up observation, which has been as long as twelve years, has revealed that about 20 per cent of these patients returned to work and later had to be readmitted to the hospital because of relapse. All such relapses occurred within four and one-half years of returning to work and most of them within two and one-half years. There have been no deaths, 2 patients were still under treatment at the close of the study in January, 1945, but their progress remains favorable, and the remainder were healthy and working when heard from last.

The policies of treatment* used in the group of patients discussed above consisted of strict bed rest as a fundamental underlying procedure in all cases. Bed rest was continued until the lesion had become stable by roentgenogram, the patient was bacteriologically negative, and all evidence of activity of the disease, such as fever, had subsided. In most cases, all or part of such treatment was carried out in the sanatorium or hospital where nursing care and freedom from responsibilities were available. When the above criteria were fulfilled, physical activity was resumed gradually. Periodic roentgenographic observations were carried out at least once per month, as were examinations of the sputa or gastric contents, sedimentation rates, and blood counts, all of which gave useful information for estimating the patient's progress. The diet was well rounded, high in protein and vitamin content, and was supplemented by addition of vitamins A, C, and D, usually in the form of cod liver oil and tomato juice. The policies concerning collapse therapy have already been discussed.

The use of streptomycin in the early case of pulmonary tuberculosis is clearly indicated when the extent of the early process exceeds the limitations of minimal disease.[5, 8] When the early tuberculous process is minimal in extent, however, the Council on Pharmacy and Chemistry has advised that streptomycin not be used. The chief contentions against the use of the drug have been that it produces toxic manifestations rather

*These policies were developed by Dr. John B. Barnwell, for many years director of the Tuberculosis Unit at the University of Michigan Hospital and at present chief consultant in tuberculosis for the Veterans Administration, Washington, D. C.

uniformly in the vestibular portions of the eighth cranial nerve, and that with its prolonged use the phenomenon of bacterial resistance is prone to develop. In view of the relatively good prognosis of early minimal lesions with other methods of therapy, it has been thought unwise to inflict these toxic manifestations, as well as a streptomycin resistant bacterial population, upon the patient. It appears to me that this viewpoint should be challenged, particularly in the light of more recent developments in regard to streptomycin therapy.

There is now reliable evidence to show that reduction of the dosage of streptomycin to 1.0 Gm. a day or less is equally as effective as higher doses, and that the incidence of toxic manifestations is considerably lessened.[9] The recent addition of dihydrostreptomycin to the therapeutic agenda also offers promise of a streptomycin product with lessened toxicity for the nervous system. The development of bacterial resistance is a phenomenon which takes place as a rule when streptomycin therapy is continued beyond six to eight weeks.[9] By discontinuing the drug at the end of six weeks of therapy, apparently the majority of patients are spared the risk of developing bacterial resistance, but within this time it is possible to attain important therapeutic gains in the treatment of early exudative tuberculous lesions. The tendency, then, toward a lesser dosage of streptomycin over a shorter period of time with good therapeutic results is doing much to challenge the present concept regarding the use of this drug in treating early minimal pulmonary tuberculosis. Finally, there has been some feeling that giving streptomycin may alter the normally developing immune response of the patient, but further studies will have to be made before proof of such an argument is available.

On the other hand, there is enough evidence compiled by various investigators to show that streptomycin is definitely indicated in the rapidly advancing pneumonic form of early pulmonary tuberculosis, and under such circumstances the drug is often life-saving. It is important to combine streptomycin with other established forms of treatment or the patient may relapse when the drug is discontinued or when the organisms become resistant.

The problem, then, is how often streptomycin should be used in cases of early pulmonary tuberculosis. The indication is definitely present in the severe pneumonic form or in the extensive hematogenous type of early disease. In the early minimal lesions, it appears that more careful study needs to be done, but the evidence for withholding the drug seems to be losing ground. Why should a useful weapon be withheld at a time when it may well help to wield a decisive blow, just because the lesion fails to measure a certain diameter? No matter what the size of the lesion, if the time required for cure can be shortened without the patient's suffering toxic side effects, the drug is probably worth a trial. Careful clinical studies with long periods of follow-up observation are important, of course, if the questions of altered immunity or tendency to relapse are to be answered.

SUMMARY

Discovery and treatment of the early lesions of pulmonary tuberculosis are highly desirable as methods of tuberculosis control. The pathologic alteration in such lesions lends itself well to prompt and intensive treatment, but if the physician fails to institute treatment, progression to advanced and disabling disease is the rule. Various aspects of the treatment of the early lesion are discussed.

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ABSTRACT OF DISCUSSION

Dr. R. G. McCorkle, San Antonio: The diagnosis and treatment of early pulmonary tuberculosis has been the goal of all physicians, whether general practitioners or chest specialists. Since institution of the widespread use of the miniature film by state boards of health and the tuberculosis associations, early symptomless pathologic lesions have been discovered which could not have been diagnosed by the routine physical examination.

The first consideration is, "Does this person have pulmonary tuberculosis or not, and if so, is the disease active?" The next step is a 14 by 17 inch film of the chest and then routine examinations, such as sputum tests, sedimentation rate, and the temperature chart. If the disease is active, the physician tries to find out the age of the lesion, and this calls for a careful past history of illness and an opinion from the roentgen-ray diagnostician as to the age of the lesion, that is, if the lesion is exudative, chronic productive, or caseous pneumonic or a mixture of these. If active, the treatment is rest, fresh air, and nourishing food, and recently, streptomycin.

The use of streptomycin in the unstable or stable exudative lesion will naturally bring on discussion

and dissension. Usually the early minimal active exudative lesion will respond to bed rest over a period of time, but I believe that a quicker response and clearing can be obtained if streptomycin is added. The period of time the drug should be used is a debatable question, varying from forty-two to one hundred twenty days. The dosage has decreased to 1 Gm. in twenty-four hours. The diagnosis of activity of an early lesion is difficult and in some cases takes time.

Routine photofluorography has uncovered extensive tuberculous involvement which has not caused symptoms, if the history given by the patient can be believed. Rest, fresh air, and nourishing food plus streptomycin should be the first line of defense, and then if no results are achieved, some type of collapse therapy.

INDICATIONS FOR PULMONARY RESECTION

G. V. BRINDLEY, JR., M. D.
TEMPLE, TEXAS

In the last few years much progress has been made in the surgical treatment of pulmonary diseases. The development of new operative procedures and refinements in anesthesia and surgical technique have altered the indications for surgery in the treatment of many diseases involving the lungs. The purpose of this paper is to present some of the newer concepts regarding the indications for pulmonary resection.

CARCINOMA OF LUNG

One of the most important indications for lung resection is pulmonary malignancy. The frequency of this condition is emphasized when it is realized that large series of autopsy figures reveal that the incidence of bronchogenic carcinoma is exceeded only by cancer of the stomach, and the most recent figures place the relative incidence as being practically equal.

Etiology and Incidence.—About the only accepted fact concerning the etiology of carcinoma of the lung is that chronic irritation, in many forms, seems to predispose the patient to the formation of malignant pulmonary neoplasms. Because of occupational irritants, the incidence of pulmonary cancers might be expected to be higher in the male, and actually the incidence is almost 6 males to 1 female. The two lungs are involved with practically equal frequence. The age incidence is similar to that for patients with cancers in other parts of the body, the majority of the patients being between 40 and 60 years.

Signs and Symptoms.—It is important to review some of the signs and symptoms of lung cancers. Cough is the most frequent symptom and is present in from 70 to 90 per cent of the patients. Since so many people without malignant pulmonary disease also have a cough, careful evaluation of this symptom must be made. As pointed out by Rienhoff,[5] change in the nature of a cough or development of an unexplained cough in a patient who did not cough previously is especially significant.

Hemoptysis frequently occurs and often is the symptom which causes the patient to consult a physician. Unless clinical examinations indisputably establish the diagnosis of tuberculosis, bronchiectasis, or lung abscess, hemoptysis must be considered as due to intrabronchial neoplasms until this cause has been carefully excluded. It should be recalled that any of the diseases just mentioned may also be associated with bronchial carcinoma.

Occasionally, vague thoracic pain may be a symptom, and in the more peripherally located lesions pain may be one of the earliest symptoms. Persistent unexplained thoracic pain should always suggest pulmonary cancer to the examiner.

As mentioned in a previous publication,[3] dyspnea appears late in the disease only after the neoplasm has interfered with respiratory function, either by bronchial obstruction or by extension to the pleura and subsequent pleural effusion.

When the tumor involves the lower lobe of the left lung, epigastric distress may occur and occasionally is accompanied by nausea and vomiting. Late symptoms are loss of weight and strength, dyspnea, cyanosis, and symptoms due to metastasis or invasion of contiguous structures.

Diagnosis.—Roentgenography of the chest is one of the most important means of examination available and it suggests the diagnosis in most cases. Bronchoscopy should be employed as a routine procedure in practically all cases in which primary carcinoma of the bronchus is suspected. The lesion can be visualized and a biopsy specimen taken in from 50 to 70 per cent of cases. In those cases in which a positive diagnosis cannot be made by biopsy, microscopic examination of secretions aspirated from the involved bronchus frequently establishes the diagnosis.

Exploratory thoracotomy should be performed when it is impossible to make a definite diagnosis of a known or suspected pulmonary neoplasm. It is a relatively safe procedure, associated with no more risk than an exploratory celiotomy, and should be used

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Read before the Section on Surgery, State Medical Association of Texas, Annual Session, Houston, April 27, 1948.

whenever necessary to make a positive diagnosis.

Treatment.—It is my opinion that the proper treatment of bronchogenic carcinoma is total pneumonectomy and excision of the regional lymph nodes. There may be an occasional case in which the lesion is quite small and peripheral in which lobectomy would be sufficient, but I believe that pneumonectomy with excision of the mediastinal nodes offers a better prognosis as regards recurrence of the malignancy.

BRONCHIAL ADENOMAS

Considerable difference of opinion still exists regarding the malignancy or benignancy of adenomas of the bronchus. Their growth apparently is usually slow but authentic incidents of metastasis have been reported. Therefore, it seems that these lesions should be considered to be low grade malignancies. However, bronchial adenomas differ in many respects from the ordinary type of carcinoma of the lung. Bronchogenic carcinoma occurs more often in men, in the older age groups, and is associated with a relatively poor prognosis. Adenoma of the bronchus occurs predominantly in women, usually in patients less than 40 years of age, and is associated with a much better prognosis. Symptoms of adenoma of the bronchus naturally resemble those of bronchogenic carcinoma and usually the differentiation must be made by bronchoscopy and biopsy.

Bronchoscopic removal of the adenoma has been advocated by some but in most cases lobectomy seems preferable, for several reasons: (1) Definite metastases have been reported, confirming the impression that this is a malignant tumor. (2) The adenoma frequently extends outside the bronchus and complete removal by bronchoscopy may be impossible. Furthermore, the vascularity of the tumor makes its removal by bronchoscopy difficult. (3) If the adenoma has produced considerable bronchial obstruction, rather extensive suppurative disease may be present in the lobe distal to the obstruction.

BRONCHIECTASIS

One of the most frequent indications for pulmonary resection is bronchiectasis. It is a serious chronic disease accompanied by physical and psychologic debility. Many causes of bronchiectasis have been mentioned but the most important are bronchial infection and obstruction. As pointed out by Adams,[1] some of the common contributing causes are (1) diseases of the accessory air passages; (2) respiratory infections and infectious diseases, such as recurrent bronchitis, pneumonia, measles, pertussis, and scarlet fever; (3) cystic disease of the lung; (4) bronchial obstruction, including foreign body, hyperplasia of mediastinal lymph nodes, and carcinoma or adenoma of the bronchus; (5) emphysema or atelectasis; (6) situs inversus, and (7) sinusitis.

It is rather generally agreed that the medical treatment of bronchiectasis is only palliative and that in most patients who are satisfactory operative risks, resection of the diseased pulmonary tissue is indicated.

Bronchiectasis limited to one lobe or to a segment of a lobe is the ideal indication for surgical treatment: lobectomy or segmental lobectomy. The combinations of left lower lobectomy and lingulectomy, or right lower and right middle lobectomy can be performed when necessary with little added risk. If the disease involves all the lobes of one lung, if the patient is a suitable risk, and if he has sufficient pulmonary reserve, pneumonectomy is indicated. Bilateral lobectomy, in stages, is associated with a greater hazard than lobectomy performed for unilateral disease; but in suitable, carefully chosen cases it may be the preferable plan of treatment.

CHRONIC LUNG ABSCESS

Chronic pulmonary abscesses which have thick fibrous walls, or are associated with extensive pulmonary suppurative disease, or persist after open drainage of the abscess has been performed, should be treated by resection of the diseased lobe or lobes. Several surgeons have shown in recent reports[4, 6] that pulmonary resection for chronic lung abscess can be performed with a mortality of only from 5 to 8 per cent, and a cure rate of from 80 to 91 per cent.

Since the disease is completely eradicated at the time of resection, rehabilitation of the patient is much more rapid than after open drainage of this type of lesion.

CHRONIC NONSPECIFIC SUPPURATIVE PNEUMONITIS

This is a chronic disease of unknown etiology and insidious onset. The patient usually has a chronic cough, productive of moderate amounts of mucopurulent sputum, and occasional hemoptysis. There is a low grade fever, and chest roentgenograms reveal an area of increased density extending out from the hilus, suggestive of pneumonitis. The resected specimen reveals a chronic suppurative pneumonitis, with fibrosis, many lymphocytes and plasma cells, and the presence

of macrophages containing lipoid material. The pathologic picture suggests lipoid pneumonia but many times no history of the use of an oily substance can be elicited.

Careful search for tubercle bacilli should be made to exclude tuberculosis. Bronchography is useful in differentiating the disease from bronchiectasis. The fact that cavitation is not present helps exclude nontuberculous lung abscess. It is difficult, and frequently impossible, to rule out the possibility of carcinoma without an exploratory thoracotomy. Bronchoscopy and examination of secretions aspirated from the suspected bronchus are valuable in the differential diagnosis.

In a recent report,[2] Adams and Kershner have suggested that roentgen-ray treatments may be effective in early cases. If roentgen-ray and medical treatments are not successful, pulmonary resection is indicated.

PULMONARY CYSTS

Cystic disease of the lungs may be of congenital or acquired origin. Congenital cystic disease may be considered in two groups. The first is the large solitary cyst which may occupy one or more lobes. Such cysts may displace the heart and mediastinum and cause considerable compression of the surrounding pulmonary tissue. The second type of congenital lung cysts is one in which the lung parenchyma is replaced by multiple miliary cysts or large multilocular cysts.

Acquired cysts usually develop following respiratory infection, chronic bronchitis, emphysema, or bronchial asthma. Any lesion producing incomplete obstruction of the bronchus may be followed by emphysema, blebs, and bullae. Uncomplicated lung cysts rarely produce symptoms. However, they are subject to several serious complications. Probably the most frequent is hemorrhage, followed in frequency by infection and spontaneous pneumothorax.

Drainage of a pulmonary cyst is inadequate and leads to an infected cavity with a draining sinus. Because of the nature of the lesion, resection of the pulmonary tissues containing the cystic disease is the proper surgical treatment.

PULMONARY TUBERCULOSIS

There are still differences of opinion regarding the indications for lobectomy and pneumonectomy in the surgical treatment of pulmonary tuberculosis. Thoracic surgeons agree that resection is a valuable addition to the surgical armamentarium and are now endeavoring to establish definite indications for each procedure. The indications must necessarily vary with each patient but generally may be classified as follows:

Lobectomy.

1. Stenotic lesions of the lobar bronchi.
2. Residual cavitation and positive sputum after thoracoplasty.
3. Tuberculoma.
4. Tuberculous bronchiectasis, with positive sputum, without parenchymal disease, and without visible bronchial ulcerations.
5. Thick walled tension type cavities, especially hilar, in the lower lobe, which are uncontrolled by more conservative measures.

Pneumonectomy.

1. Stenosis of the right or left main bronchus.
2. Uncontrolled unilateral disease following thoracoplasty.

Contraindications.

1. Bilateral active tuberculosis.
2. Progressive bronchial ulcerations.

In carefully chosen cases the incidence of postoperative complications has been low. However, pulmonary resection is not a substitute for collapse therapy and where one of these procedures seems likely to be effective, it should be used in preference to resection.

With refinements in anesthesia, improvements in surgical technique, and the development of newer chemotherapeutic agents, resection promises to assume a more important role in the treatment of pulmonary tuberculosis.

CONCLUSIONS

1. Pulmonary resection can now be performed as safely as comparable major surgery elsewhere in the body.
2. Pneumonectomy is the treatment of choice in bronchogenic carcinoma.
3. Bronchial adenomas should be considered as low grade malignancies. Occasionally bronchoscopic removal may be sufficient, but usually lobectomy is preferable.
4. Bronchiectasis is a serious chronic disease accompanied by physical and psychologic debility. In most patients who are satisfactory operative risks and in whom the disease is not too extensive, resection of the diseased pulmonary tissue is indicated.
5. Chronic lung abscesses which have thick fibrous walls, or are associated with extensive pulmonary suppurative disease, or persist after open drainage of the abscess has

been performed, should be treated by resection of the diseased lobe or lobes.

6. Chronic nonspecific suppurative pneumonitis is an indication for pulmonary resection if medical treatment is unsuccessful.

7. Localized cystic disease of the lungs is best treated by removal of the involved pulmonary tissues.

8. Pulmonary resection may be useful in the surgical treatment of pulmonary tuberculosis. The indications for lobectomy and pneumonectomy have been reviewed.

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ABSTRACT OF DISCUSSION

Dr. A. W. Harrison, Galveston: Dr. Brindley has given a clear and concise outline of the indications for pulmonary resection. These are consistent, for the most part, with opinions of other thoracic surgeons throughout the country, and they have been set down in unusually lucid fashion. This facility of Dr. Brindley, however, should not be allowed to lead us into thinking the problem is simple.

Diagnosis is still the major problem. The solution of this problem takes time, and time is often our undoing. A straightforward case of bronchiectasis does not usually cause the internist or general practitioner a great deal of concern. The extent of the disease may pass on to the specialist the decision of whether or not to operate, but delay here is not so critical.

It is the early diagnosis and treatment of primary lung cancer that is the greatest challenge and responsibility. It is still a matter of several months before the average patient presents himself after onset of his symptoms, and to plague us more is the fact that there are another two to three months before he is operated upon. Here are two responsibilities which physicians have not fully assumed.

A casual perusal of the records of the University of Texas Hospitals for the last two years revealed some 38 cases of primary carcinoma of the lung. Out of all these there were only 9 in whom pneumonectomy was done. In less than half of these 9 was there any hope of cure. This is in line with the records of other clinics over the country.

Physicians who see only an occasional case in their own practice are not so impressed. But imagine finding 3 out of every 4 cases explored inoperable. Imagine facing 3 out of every 4 hopeful families with bad news. Here is the no. 1 problem in lung surgery.

In the non-neoplastic field the practical application of advances in physiology and technique has not kept apace. Segmental resection is commonplace, but how often is the respiratory function carefully assayed? How often can the physician tell a patient exactly what his breathing reserve will be following operation? These are refinements that are yet to come, for the most part.

Contraindications to lung resection seem to be only relative. Certainly age is no longer a critical consideration. If a patient is not in obvious heart failure, the physician is tempted to proceed with resection of a cancer if at all possible. On the other hand resection of a cystic lung in the presence of rheumatic heart disease may be entirely questionable. In general it seems the trend is toward a neater handling of the complicating factors and proceeding to desirable surgical ends.

SURVEY OF METHODS FOR DETECTION AND MEASUREMENT OF IONIZING RADIATIONS

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If and when atomic warfare comes, the most important medical apparatuses in use will be the Geiger counter, the portable ionization chamber, or some similar device. At that time, not only radiologists but all the medical profession will be forced to become acquainted with methods of measurement of the devastating radioactivity that would follow such an event. Even now the Army and Navy are running training courses in such techniques. Radiologists will be looked to for information and advice on this subject, and it behooves them to renew their knowledge and interest in the detection and accurate measurements of such radiations.

However, even if the atomic bomb had never been developed, other advances in physics and medicine make an accurate knowledge of mensuration of radioactivity a "must" for radiologists. The radioactive isotopes produced in the cyclotron and the uranium pile could not be used in research as "tracers" or in medicine as diagnostic or therapeutic agents if their radioactivity could not be accurately estimated. Increased realization of the dangers of chronic exposure to ionizing radiations—such as alpha, beta, gamma, and x-rays and fast and slow neutrons—has occurred in recent years. This has been partially due to the high incidence of leukemia in radiologists and partially due to the knowledge gained by the animal experimentation growing out of the atomic bomb research program. The detection and measurement of small amounts of ionizing radiation in their own x-ray departments, therefore, should be of great personal interest to radiologists.

All practical forms of measurement of radioactivity depend on the ability of the radiation to produce ionization in solids, liquids, or gases. Since the physiologic effects of radiation depend upon ionization, it is logical that results of estimation of radiation

Read before the Section on Radiology and Physiotherapy, State Medical Association of Texas, Annual Session, Houston, April 27, 1948.

by ionization methods should parallel these effects.

The commonly used methods of measurement of ionizing radiations are (1) photographic methods; (2) ionization chambers, including simple, proportional, and Geiger counters; and (3) miscellaneous methods.

PHOTOGRAPHIC METHODS

All photographic methods are based on fogging of a photographic emulsion by the ionization produced by the incident radiation. These methods are the oldest in use and for gross detection and mensuration are the simplest. Measurements of moderate accuracy can be done with some difficulty but extreme accuracy is seldom attained. This difficulty is due to variations in film sensitivity, film fog, developing, fixing, and washing, none of which factors is amenable to absolute control. For integration of small amounts of exposure over relatively long periods of time with some degree of accuracy, films are highly satisfactory. Their greatest practical application is in measurement of scattered radiation affecting personnel. Fortunately, films exposed to roentgen rays without screens will give the same density for a given amount of radiant energy, whether it is all given in one-tenth of a second or whether it is spread out in small increments over a period of weeks. Films exposed to rather widely differing qualities of roentgen rays will differ only moderately in their response. For example, it takes only about 40 per cent more roentgen rays of well-filtered 200 kilovolt quality to produce the same density as those produced at 70 kilovolts with low filtration.

A typical technique for estimation of dosage to personnel in the average roentgen-ray department would be as follows: A dental film is worn by each person for five days. Two other films from the same pack should be exposed to .5 r of roentgen rays of the shortest wave length that is used in the department. These control films, along with the test films, should be developed fully in good solutions at the proper temperature. If any of the test films are darker than the controls, an exposure of greater than the standard tolerance dose of 0.1 r per eight hour day is indicated and further investigation is necessitated. The only drawback to this method is that the entire .5 r of radiation may have been obtained in one short exposure with a resultant greater biologic effect.

In more advanced techniques a "step" filter made from such materials as copper or aluminum is used in front of the test film. By measuring the different densities under this filter, a good estimate can be made of the average wave length of the fogging radiation. One commercial concern now offers a radiation detection service using just such a device to give both quantity and quality of the incident radiation.

The range of the photographic method is limited and is unsatisfactory for amounts of radiation smaller than .01 r or greater than 5 r.

IONIZATION CHAMBERS

When accurate estimations of either large or small amounts of ionizing radiations are to be made, an ionization chamber must be used.

Simple Ionization Chambers. — The simplest ionization chamber is a gas-filled container with a wall of conducting material and a central electrode of conducting material, highly insulated from each other.

If a photon of radiant energy of more than a few electron volts enters the chamber, it may possibly collide with a gas molecule, thereby causing ejection of an electron from the molecule. This ejected electron is the negative ion and the remainder of the molecule becomes the positive ion. These two ions are termed an ion pair. A photon of ultraviolet light might produce 1 such ion pair; a cosmic ray will produce about 30 pairs; and an alpha particle may produce 10,000 pairs. If no potential difference exists between the chamber and the central electrode, these ions will gradually recombine, completing the process in about three hundred seconds. However, if a small potential difference is impressed across the chamber and its electrode, for example, 1 volt for each centimeter separation, a certain number of positive ions will be drawn to the negative electrode before recombination, as will an equal number of negative ions be drawn to the positive electrode.

If the voltage between the electrodes is gradually raised, a point will eventually be reached at which practically all the ions will be collected on the electrodes and no recombination will occur. This voltage will be the so-called saturation voltage.

All simple ionization chambers work on this same principle although many elaborate variations have been made. The size of the chamber depends on the wave length of the photons to be measured. For measuring gamma rays and cosmic rays, large chambers with gas pressures of many atmospheres are used because of the long range of some of

the high energy photoelectrons. On the other hand, tiny chambers of a few millimeters in diameter have been used to measure radiations in tissues.

A large variety of instruments are used to measure the ions collected in these chambers. However, they are represented by a few simple types:

1. Electrometers. Basically, these are instruments that work on electrostatic repulsion of like charges. The simplest of these instruments is the ordinary crude gold leaf electroscope. The most elaborate and sensitive of these instruments is the quadrant electrometer of the Compton type, which is usually used in research.

Other sensitive and commonly used electrometers are based on repulsion of a small gold-plated quartz fiber by a charged body. The movement of the fiber is observed with a simple microscope. This latter type of electrometer can be made rugged and is used in most commercial roentgen meters, "fountain pen" ionization chambers, and so forth.

2. Vacuum Tube Amplification. In many applications the feeble current developed in an ionization chamber is allowed to flow across a high resistance and the fair-sized voltage drop that results is amplified by special vacuum tubes that have a low grid current and high grid resistance. Many laboratory instruments of high accuracy use such "electrometer" vacuum tube circuits. This type of measuring circuit has the advantage of great sensitivity combined with ruggedness and portability. A common application today is its use in portable apparatus that indicates the intensity of scattered radiations directly and immediately on an ordinary meter. A number of such devices are commercially available.

3. Galvanometers. When the ionization chamber is large and the radiation is intense, an ordinary galvanometer, or even a microammeter, can be used to measure the ionization current. This method is commonly used to monitor the output of deep therapy roentgen-ray machines.

Ionization chambers can be used to measure almost any intensity of radiation. Those used in research, properly built, may measure ion pairs at the rate of only a few per minute; whereas roentgen-ray therapy monitoring chambers may measure 1,000 r or more per minute. If the ionizing radiation is arriving in the chamber in single photons or particles separated by intervals of a few milliseconds, the number of ion pairs liberated by the photon, or particle, may easily be determined by amplifying the resulting impulses and measuring their amplitude on some instrument, such as an oscilloscope. For example, a pulse due to the passage of a cosmic ray, which produces initially 30 ion pairs, will be 1/300 of the amplitude of the pulse from an alpha particle which produces 10,000 pairs. The nature of the particle or photon will then be indicated by the size of the pulse.

Slow neutrons may be detected by using boron, either in the wall of the chamber or as BF_3 gas in the chamber. The slow neutron is captured by the B^{10} nucleus and an alpha particle is emitted, which is then easily detected and measured.

Fast neutrons are measured by the recoil protons they produce in some hydrogenous material, such as paraffin. Recoil protons have ionizing properties similar to alpha particles and thus can easily be measured.

Proportional Counters. — These counters are a transitional type between simple ionization chambers and Geiger counters. If the voltage across the electrodes of a simple ionization chamber is increased sufficiently, a point will be reached at which a negative ion will be accelerated to a speed sufficient to ionize any other gas molecule it might strike. In this case, one original ionizing act has resulted in two ion pairs. As the voltage is further increased, a large percentage of the original ion pairs will produce secondary, tertiary, or even a greater number of ion pairs. In turn, at higher voltages these secondary and tertiary ion pairs will produce other ion pairs. The result of this process is a great amplification of the original ionizing process. By careful adjusting of voltage and gas pressures, amplifications of from 1,000 to 1,000,000 may be obtained, although 10,000 is usually the upper limits of stability and linearity.

Proportional chambers are almost entirely research instruments.

Geiger Counters.—If the voltage in a proportional counter is gradually increased, a point will be reached at which the production of one ion pair will be followed by an "avalanche" ion amplification, in which gas ionization will be practically complete. This "total" ionization will cause a maximum voltage pulse across the chamber, regardless of the strength of the original ionizing radiation. In other words, an ultraviolet photon, a cosmic ray particle, or an alpha particle will produce an identical sized pulse from the counter. Such an ionization chamber is known as a Geiger counter.

Counters have been built in many sizes and shapes. In general, they consist of a metal

cylinder surrounding a platinum wire electrode, both enclosed in glass and containing an inert gas at a few millimeters' pressure. The glass may be made extremely thin in some areas in order to admit beta radiation, and it may be of special composition to pass ultraviolet rays. Most small practical counters work at a potential of from 800 to 1,200 volts between the cylinder and the wire, the latter usually being positive. With these large voltages a glow discharge would occur with each ionization pulse unless some extinguishing circuit were built into the counter. The simplest circuit for this purpose is a resistance of 100 to 1,000 megohms in series with the voltage supply. The voltage drop across this resistance reduces the chamber potential to below the ionizing level whenever a pulse occurs. Although a pulse from a Geiger counter is large enough to be heard on a good pair of high impedance earphones, vacuum tube amplification is practically always used to bring it up to good audibility. The simplest practical form of a Geiger counter circuit, therefore, usually has one stage of amplification. This simple type of counter is limited in its applications and is usually used only in searching for small amounts of stray radiation or for lost radium.

Geiger counters are so sensitive that even a few milliroentgens per hour will produce a number of impulses, too great to be satisfactorily counted by ear. Impulses up to 100 per second can be recorded on mechanical counters by suitable vacuum tube amplification. If the counts come faster than this, vacuum tube "scaling" circuits that will turn out one impulse for every 4, 8, 16, 32, 64, or even more impulses fed into the circuit are used to reduce the counts to a point at which they can be recorded on the mechanical counter.

Other vacuum tube circuits will integrate the counts electronically and indicate their frequency on a simple meter.

Geiger counters are so sensitive that they can detect the formation of a single ion pair. On the other hand, they lose some accuracy if the number of counts exceeds a few thousand per second. They are not used for measuring high intensities of radiation.

MISCELLANEOUS

Diamond Counters.—Recently it has been found that a perfect diamond, properly cut, will act as a Geiger counter if proper voltages (1,000±) are applied to electrodes on certain opposite facets. The probability of a photon producing an ionizing collision in this counter is much higher than in an ordinary Geiger counter and it is therefore more sensitive, reputedly a thousand times more so, than an ordinary counter. This diamond counter has not come into general use as yet.

Zinc Sulfide Counters.—When an ionizing event occurs in certain materials, such as zinc sulfide, fluorescence of the substance occurs. The intensity of this fluorescence can be measured by suitable photoelectric cells and amplifying circuits. The Morgan Photo Electric Exposure Timer is such an instrument and is in daily use in diagnostic roentgen-ray laboratories. In its practical form this kind of instrument consists of an intensifying screen wrapped around a multiplier photoelectric cell. The photoelectric cell with its tremendous amplification can cause a rugged meter to register accurately even faint illumination of the screen. It is also comparatively new and just how practical it will be for routine measurements of radioactivity is as yet questionable. However, it is believed to hold great promise.

SUMMARY

An attempt is made to point out the importance of a thorough knowledge of the fundamentals underlying the measurement of ionizing radiations. The basic principles of the various methods of measurements are discussed.

612 Medical-Professional Building.

NEW ANTIHISTAMINIC

Excellent results in treatment of allergies with a new drug have been reported in the *Annals of Allergy* (July-August, 1948) by Dr. Ethan Allan Brown, physician-in-chief of the Allergy Section of the Boston Dispensary, Boston. The drug, different in chemical structure from all previously known histamine antagonistics, is prophen-pyridamine.

The study reported on 227 patients seen in routine practice who presented twenty allergic and nonallergic syndromes, alone or combined. Of these, there was complete alleviation of the presenting symptoms in 140 and moderate relief in an additional 48, a total of 83 per cent. In 39 there was negligible effect. Side reactions from the Trimeton (brand of prophen-pyridamine) appeared as slight in 9 per cent; moderate in 6 per cent; and severe in less than 1 per cent. Of those with hay fever, 90 per cent were relieved; with urticaria, 81 per cent; and with mild extrinsic bronchial asthma, 80 per cent.

NEW MORBIDITY REPORT MANUAL READY

A new manual to provide for uniformity and simplification in reporting morbidity to the U. S. Public Health Service is ready for distribution. The publication, entitled "Morbidity Reporting Requirements, Including Report Forms and Instructions of the Public Health Service as of July 1, 1948," is available in limited quantities without charge from the Federal Security Agency, Public Health Service, Division of Public Health Methods, Washington 25, D. C.

PLAIN ROENTGENOGRAM OF THE SKULL

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This is not intended to be a didactic or statistical study of the radiology of the skull, but rather an attempt to evaluate more clearly the routine skull examination with particular emphasis on the criteria of the normal and abnormal.

Dr. Merrill Sosman,[2] in an interesting study of material from Cushing's Clinic published a few years ago, made the somewhat astonishing statement that approximately 50 per cent of all intracranial neoplasms should be localizable on the plain roentgenographic examination of the skull and that approximately 25 per cent should be identifiable as to cell type.

Going through the material of a large city hospital, I was able to find a total of 62 cases of intracranial lesion which showed positive findings on the routine roentgenographic examination of the skull. Careful review of the films of these cases revealed definite localizing signs in only 25, or 40 per cent, of this selected group. Even though a conservative attitude was adopted in interpreting the films, the roentgenographic evidence was misleading in 2 of the cases. In 1 case there was rather marked relative enlargement of a middle meningeal groove on one side although the lesion was proved to be on the opposite side. In the other case there were changes about the sella turcica which were interpreted as being the result of an intrasellar lesion, but ventriculography revealed an extrasellar lesion. Evidence considered to identify the lesion as to cell type was found in 12 cases or slightly less than 20 per cent. These figures are not offered for comparison with those of Dr. Sosman, or even as a strict statistical study, but merely to show that the plain roentgenogram of the skull can and often does give highly specific information regarding the nature and location of an intracranial lesion.

In offering the above percentage of accuracy of roentgenographic findings, extreme conservatism was observed. For instance, there was no lesion seen in this series which could be conclusively called a meningioma; erosion of one anterior clinoid process was not considered definitely localizing evidence, and so forth. If the number of negative skull roentgenographic examinations where intracranial lesion was present were added to the above series, these figures would compare poorly indeed with those of Dr. Sosman. I sincerely believe, however, that if the radiologist seizes on every possible advantage offered by the clinical information, including incidence, occurrence, predictability (such as the high percentage of cerebellar medulloblastoma in children) and interprets roentgenographic evidence without being swayed by other evidence, a much higher degree of accuracy can be expected from the plain roentgenographic examination of the skull.

It is my belief that not nearly so high averages as those indicated by Dr. Sosman will be obtained by the average radiologist, even under the best of conditions. A possible explanation of his high averages is the fact that a large portion of his material came from the service of Dr. Harvey Cushing. I feel certain that a large number of the patients seen by Dr. Cushing twenty years ago were referred from distant parts of the country after careful study in their own locality, and consequently were seen by Dr. Cushing and Dr. Sosman at a later stage of the disease than the average patient seen by the average radiologist, neurologist, or neurosurgeon today. The disease being more advanced, the percentage of positive radiographic findings would naturally be considerably higher.

The skull, of all fields of radiology, presents such wide variations of the normal as to make it extremely difficult to draw the line accurately between the abnormal and the normal. Therefore, it is in this field that the radiologist is most likely to commit the cardinal sin of giving misleading information if he is not constantly wary of the diagnostic pitfalls. On the other hand, accurate interpretation of a small fleck of calcification or some other relatively minor change, such as sharpening of one anterior clinoid process, may not infrequently put the neurologist or neurosurgeon on the track leading to the correct diagnosis. These more minor changes in the appearance of the skull must be interpreted entirely in the light of the clinical evidence if their value in reaching a diagnosis is to be utilized at all.

One of the most interesting aspects of radiology of the skull to me has been evidence of increased intracranial pressure. I have often asked the question, "How long does it take increase in intracranial pressure to become manifest on roentgen-ray films?" The most satisfactory answer I can give is that it may become obvious quite early as in young children in whom the sutures separate easily, it may be elevated for from three to six months before producing roentgeno-

Read before the Section on Radiology and Physiotherapy, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

graphically recognizable evidence, or it may be markedly increased for a long period without ever producing recognizable roentgenographic evidence.

One of the most frequently described and sought for manifestations of increased intracranial pressure is accentuation of convolutional markings in the cranial vault. This finding must be interpreted with the greatest of caution. Convolutional markings may be prominent normally during periods of rapid growth of the brain. As middle age is approached, the inner table of the frontal region of the skull begins to thicken about the same time the skeleton begins to become osteoporotic. As the skull becomes more radio transparent, the digital markings become more prominent on roentgenograms. Similarly, excessive exposure of the film will tend to accentuate digital markings. On the other hand, in the presence of a rapid increase in intracranial pressure, digital markings have been known to disappear completely. Thus, increase in the prominence of convolutional markings on roentgen-ray films is an unreliable sign unless it is either extremely apparent or is accompanied by other more dependable evidence of increased pressure.

Changes in circulation incident to increase in intracranial pressure produce enlargement of the little foramina in the skull that the emissary veins traverse. However, these foramina sometimes appear large in roentgenograms taken for conditions in which it is well known that there is no prolonged increase in intracranial pressure, for example, in suspected fracture of the skull. Consequently this sign is not reliable.

On the posterior-anterior film of the normal skull the lesser wing of the sphenoid may be extremely thin or apparently destroyed on one side as compared to the other, although the same changes may be the result of a neoplasm on the same side or even on the opposite side. In some persons the lesser wings of the sphenoid are unusually heavy and thick, particularly in persons in whom the other bones of the anterior portion of the skull tend to be heavy and thick. Where this situation exists, a dilated, shifted third ventricle may produce thinning on one side and lead to the erroneous impression that the uninvolved side is abnormally thickened by an overlying meningioma or other tumor. One French author, reporting the findings in 23 cases of meningioma of the lesser wing of the sphenoid, found erosion of the involved side in 5 of these cases and erosion of the uninvolved side in 3 of these cases. Consequently thinning or diminished density of the lesser wing of one sphenoid must be interpreted with the greatest of caution and is probably best evaluated only as evidence to suggest increase in intracranial pressure.

The earliest roentgenographic sign of elevation of intracranial pressure may be osteoporosis of the dorsum sella. In my experience this sign has been of greatest value in younger persons. Since the dorsum is said to be the earliest part of the skull to show the effects of osteoporosis of senility, the value of this finding must be considered questionable even in middle aged persons. Here again certain combinations of elevated kilovoltage during exposure and old or fresh developing solutions may give a false impression of osteoporosis of the dorsum.

The obtaining of both stereoscopic lateral views of the skull is of immense value in avoiding this pitfall, since it affords a multiplicity of angles as well as slight variation in technical quality of the films. The dorsum may appear osteoporotic when projected through a particularly thin portion of the temporal squama in one or more views, whereas additional views in which the temporal squama is not quite as thick may reveal the dorsum to be within limits of normal for radiographic evidence of mineral content. The obtaining of multiple stereoscopic views through the sella turcica cannot be overstressed, nor can the obtaining of the best quality of films when examining this portion of the skull. It is not unusual at all to see a dorsum sella which appears paper thin on one view, but which is seen to be perfectly normal in outline when the film is viewed stereoscopically or particularly when the other lateral view of the skull is examined. The dorsum sella cannot be said to have been properly visualized unless it is seen well on a sagittal projection, since one side of the dorsum may be eroded without this change being noticeable on the lateral stereoscopic views.

Sharpening and "undermining" of anterior clinoid processes is one of the most confusing findings described in the literature. The anterior clinoid processes may be quite sharp normally, and, particularly in children, they may vary considerably in size and may extend far posteriorly, giving the impression that they have been undermined anteriorly. Unless undermining is particularly marked unilaterally or unless the sharpening is confined to one anterior clinoid process, these findings are much better considered to be variations of the normal unless accompanied by other more convincing evidence of an intracranial lesion. When the sella turcica is viewed, the shadow sometimes

cast by the external ear on either or both sides must be kept in mind as a possible source of confusion. Calcification is not infrequently visible in the internal carotid artery as it arches posteriorly past the sella. A few roentgenographically visible flecks of calcification have been reported in normal pituitary bodies. A plait of hair projected over the sella may produce a slightly confusing shadow on flat films of the skull. It is not at all unusual on films of good contrast to see a small area of bony thickening in the temporal squama on one side projected in the sella turcica. When viewed as a flat film this thickening gives the impression of calcification in the hypophyseal fossa.

While maximum dimensions for the normal sella turcica are fairly well established, it is not practical to attempt to attach definite significance to the unusually small hypophyseal fossa because of the possibilities for lateral extension of pituitary gland tissue. If the pituitary gland has become atrophic, other surrounding soft parts will easily fill in this space.

It is not within the realm of this study to include a detailed discussion of the diagnostic pitfalls to be encountered in tumors and other conditions about the hypophyseal fossa and optic chiasm since a number of interesting and detailed discussions of such pitfalls are available in the literature. It is common knowledge that generalized elevation of intracranial pressure may produce enlargement of the hypophyseal fossa, identically aping the changes produced by intrasellar tumor. The so-called parasellar type of erosion sometimes seen in pituitary adenoma arising on one side may also be produced by generalized increase in intracranial pressure and more often by a tumor located closely above the sella. A dilated, shifted third ventricle may also act as a tumor, producing this same change.

Anomalies of the branches of the internal carotid artery and their relationship to the optic chiasm may result in a confusing clinical picture. Atypical visual field changes may be apparent when pressure is applied on the component parts of the optic chiasm and on these anomalous vessels by a pituitary tumor arising below or cranio-pharyngioma or other tumor arising above the optic chiasm. Visual changes in pituitary adenoma may occur quite early or late, depending on the numerous variations in relationship of the chiasm to the proximal extremities of the optic foramina, the distance between the inferior surface of the optic chiasm and the diaphragma sella, the strength of the diaphragma sella, the presence or absence of ossification of the intraclinoid ligaments (ossification of these ligaments being assumed to tend to prevent lateral extension of the tumor tissue and encourage extension of the tumor upward), the depth or relative shallowness of the sella turcica, the tendency to anterior location of the chiasm or tendency to relative posterior location of the chiasm, and many other factors. All of these minor variations will tend to alter the clinical picture particularly as to visual field changes and their relatively early or late appearance.

In one excellent study of a series of pituitary adenomas, the visual field changes were atypical in 14 per cent of cases for the above named reasons. For this reason, the radiologist should make a study of the sella turcica in all cases of optic atrophy referred to him for roentgenographic search for focus of infection, such as in the paranasal sinuses.

One of the most confusing findings in the cranial vault to me has been localized thickening of the inner or outer tables. Localized thickening of either table of the cranial vault is most frequently seen on the projection perpendicular to this portion of the skull as an area of increased density. Suffice it to say that where the typical picture of thickening of a fair sized localized area of calvarium with obvious accentuation of vascular markings extending into this area is present, the change is most likely due to meningioma. The changes seen in the skull are no index to the size or extent of the tumor, since only a small portion of a large tumor may be in contact with the cranial vault. Meningiomas involving the upper half of the cranial vault are more likely to be typical and those involving the lower half of the cranial vault are more likely to be confusing. Some meningiomas are destructive when in contact with the cranial vault, rapidly perforating the calverium and extending out beneath the scalp. Others produce the so-called typical, rather dramatic reaction of bone; still others, presumably because of their slow growth, may become enormous without producing any radiographically visible change in appearance of the skull.

The diagnosis of acute acoustic neurinoma fortunately is dependent mostly on the clinical picture, which is typical. The presence or absence of roentgenographic changes apparently is dependent upon the rapidity of growth of the tumor, the more rapidly growing tumors ordinarily not being roentgenographically visible when the patient reaches that portion of the clinical course at which diagnosis is made. On the other hand, the slower growing acoustic neurinomas are said to produce roentgenographically visible signs

much more often. The roentgenographic picture of acoustic neurinoma may be aped by a meningioma in the region of the apex of the petrous pyramid. Increase in subtentoral pressure over a period of time may produce dilation of both internal auditory meati, suggesting bilateral acoustic neurinoma, which incidentally sometimes does occur, thereby posing a problem of differential diagnosis. Lastly, the internal auditory meati are often seen to vary considerably in size in the normal person.

Calcification in the normal sella turcica has been mentioned before in this paper. Careful analysis of these reports shows that they originated in work done thirty or more years ago, and reference to them can be found in the literature from time to time since then—even in at least one excellent and fairly recent textbook of radiology[1]—but to my knowledge there has been no original report of this finding on work done since 1925. The lack of further confirmatory reports suggests that it would be more reliable to attach pathologic significance to calcification seen in the sella by modern technical methods until more dependable evidence is presented to the contrary.

It is worth while in concluding to point out that about 50 per cent of tumors producing localizing signs on routine roentgenographic examination also exhibit signs fairly positively identifying them as to cell type. This was true both in my group of cases and in the material published by Dr. Sosman.

SUMMARY

A few of the roentgenographic changes commonly seen in the skull have been discussed, and it is hoped that their evaluation has been a little more clearly established.

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GASTROENTEROLOGICAL AWARD

The National Gastroenterological Association has announced its annual cash prize award contest for 1949. A certificate of merit and $100 will be given for the best unpublished contribution on gastroenterology or allied subjects. Certificates will also be awarded those physicians whose contributions are deemed worthy.

Contestants residing in the United States must be members of the American Medical Association. All entries should be limited to 5,000 words, be typewritten in English, prepared in manuscript form, submitted in five copies accompanied by an entry letter, and must be received not later than April 1, 1949. Entries should be addressed to the National Gastroenterological Association, 1819 Broadway, New York 23.

NEW DEVELOPMENTS IN IRRADIATION THERAPY OF CANCER OF THE UTERINE CERVIX

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Articles dealing with the revival of the Wertheim operation for early cancer of the cervix have appeared frequently in the medical literature during the past few years and have somewhat overshadowed those dealing with the steady improvement in irradiation techniques. Since even the most ardent advocates of radical surgery believe that at least 85 per cent of the patients coming under their observation should be treated with irradiation it is still the most important therapeutic procedure available and radiologists are constantly striving to improve their results.

Unpleasant sequelae following irradiation have been accepted by many as a necessary evil if the cure rate is to be kept high, but every effort has been exerted in our clinic during the past fifteen years to perfect techniques designed to eliminate practically all of these untoward complications without lowering the salvage rate. The series of cases covered by the statistics presented in table 1 is offered as proof that our objective has been attained. The data used in this table

TABLE 1.—*All Patients with Cancer of Cervix Treated from 1938 to 1945. Checked January 1, 1947.*

Treatment Date	Total Cases	Years Followed	Alive					Complications Possibly From Irradiation
			Total		With Cancer	Symptom Free		
			No.	%		No.	%	
1945	47	1-2	38	80.0	15	23	48.9	2 vesicovaginal fistulas
1944	41	2-3	23	56.0	3	20	48.7	0
1943	50	3-4	22	44.0	1	21	42.0	1 vesicovaginal fistula
1942	32	4-5	12	37.5	0	12	37.5	1 peritonitis
1941	33	5-6	14	42.4	1	13	39.0	2 vesicovaginal fistulas
1940	30	6-7	12	40.0	0	12	40.0	0
1939	39	7-8	14	36.0	0	14	36.0	1 intestinal obstruction
								1 peritonitis
1938	35	8-9	14	40.0	0	14	40.0	1 rectovaginal fistula
Total	307							6 fistulas 2 peritonitis 1 intestinal obstruction

have been checked independently by Dr. A. W. Diddle, a member of the staff of the Department of Gynecology of Southwestern Medical College. All of the patients admitted to our clinic from 1938 through 1945 are included. Since irradiation sequelae usually produce symptoms within two years after treatment, the inclusion of patients treated through 1945 seems fair.

Read before the Section on Radiology and Physiotherapy, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

Vaginal fistulas were observed in 6 cases (1.9 per cent), all of which were well advanced. Smith[7] stated that the incidence of such fistulas in untreated patients is 7 per cent and therefore the smaller number observed in our series can hardly be attributed to the treatment administered. The peritonitis observed in 2 cases was produced by the manipulation incident to the radium applications and not by the radiant energy itself. The patient observed in 1939 died, but the later one was saved with penicillin and no patients have been lost because of secondary infection in recent years. The intestinal obstruction reported in 1939 resulted from overtreatment of an advanced case and could have been prevented by a less radical technique. It is worthy of emphasis that none of these patients developed persistent proctitis, intestinal perforation, chronic cystitis, ureteral stricture secondary to irradiation, or fractured hips.

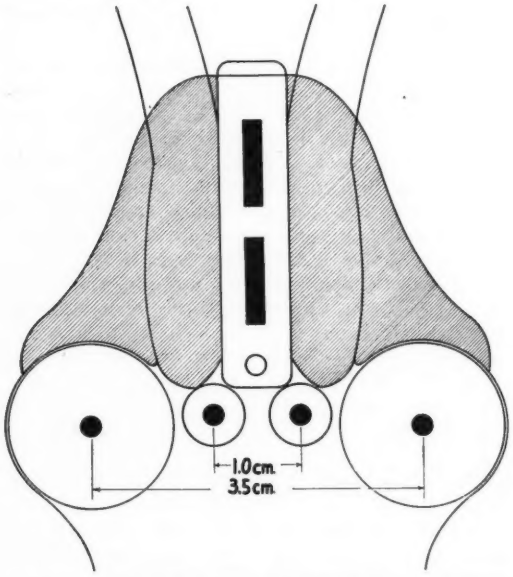

FIG. 1. Positions of radium applicators used in the treatment of early cancer of the cervix. The crosshatched area receives a dose of not less than 6,000 gamma r, which is carcinomacidal when given in a period of seven days.

The results obtained with all of the patients treated three or more years and five or more years before this study was made are included in table 2. It is interesting to note that there is little difference in the salvage rate in the two groups and patients found to be well at the end of three years usually remain well. For one reason or another a few of these patients did not receive adequate therapy. A review of the results obtained in the group which received what we believe to be proper therapy is shown in table 3 and the five year salvage rate of 40.7 per cent indicates the true value of the methods employed. However, most authorities believe that only absolute statistics should be used in comparing the results obtained in different clinics. The best absolute figures published in the world's literature are set down in table 4, and it is evident that our absolute salvage rate (38.6 per cent) compares favorably with the rates reported in other clinics.

Although both the Schmitz and the League of Nations Classifications are of great value, difficulty is often experienced in determining the exact group in which a certain case should be placed, and different examiners do not always agree on the clinical classifications. For this reason our cases were placed in three groups on the basis of findings which are easily ascertained and the great difference in the salvage rates indicates that this simple classification is of practical value. When the primary growth occupied less than two-thirds of the face of the cervix, the absolute five year cure rate was 77 per cent. The absolute figure dropped to 61.5 per cent when all of the cases which had neither vaginal involvement nor demonstrable parametrial invasion were included, and the salvage was found to be only 16.6 per cent when either of these two bad prognostic signs was present.

TABLE 2.—*All Cases of Cancer of Cervix Treated.*

Years Followed	Total Cases	Alive				
		Total		With Cancer	Symptom Free	
		No.	%		No.	%
3-9	219	88	40.1	2	86	39.2
5-9	137	54	39.6	1	53	38.6

TABLE 3.—*Completely Treated Cases of Cancer of Cervix.*

Years Followed	Total Cases	Alive				
		Total		With Cancer	Symptom Free	
		No.	%		No.	%
3-9	196	88	44.8	2	86	43.3
5-9	130	54	41.5	1	53	40.7

TABLE 4.—*Cancer of Cervix Treated with Irradiation.*

	No. Cases Treated	Well 5 Yrs. (%)
Pitts & Waterman (Providence)	308	32.1
Institute of Radium (Paris)	1,310	35.3
Gordon Richards (Toronto)	669	35.6
Marie Curie Hospital (London)	802	35.8
Institut du Cancer (Louvain, Belgium)	442	37.6
Det Norske Radiumhospital (Norway)	157	39.5
Martin X-Ray & Radium Clinic (Dallas)	137	38.6

Although the revival of the Wertheim operation for favorable early cases by Meigs[4] and others is of interest, an unfortunate tendency to carry out incomplete operations on

improperly selected cases has been observed in our section of the country. During the past few years an increasing number of such patients for whom only a subtotal hysterectomy has been carried out have applied for treatment. Many of them have not been followed for long periods, but it has already become evident (table 7) that the prognosis in such cases is not nearly so good as that observed in primary cancer of the cervical stump. Surgeons interested in this type of work should review the indications set down by Meigs and should be certain that they are capable of performing the difficult technical procedure which he recommends. Certainly the chances of success are much better when irradiation therapy is not preceded by an incomplete operation.

TABLE 5.—*Cancers Covering Less Than Two-Thirds of the Face of the Cervix.*

Years Followed	Total Cases	Known to Be Well		Untraced Well at Last Visit	Possible Salvage	
		No.	%		No.	%
3-9	54	42	77.7	7	49	90.0
5-9	39	30	76.9	5	35	89.7

TABLE 6.—*219 Cases of Cancer of Cervix Followed from Three to Nine Years.*

Years Followed	Without Vaginal or Parametrial Involv.			With Vaginal or Parametrial Involv.		
	Total	Well		Total	Well	
		No.	%		No.	%
3-9	109	68	62.4	110	18	16.3
5-9	65	40	61.5	72	13	16.6

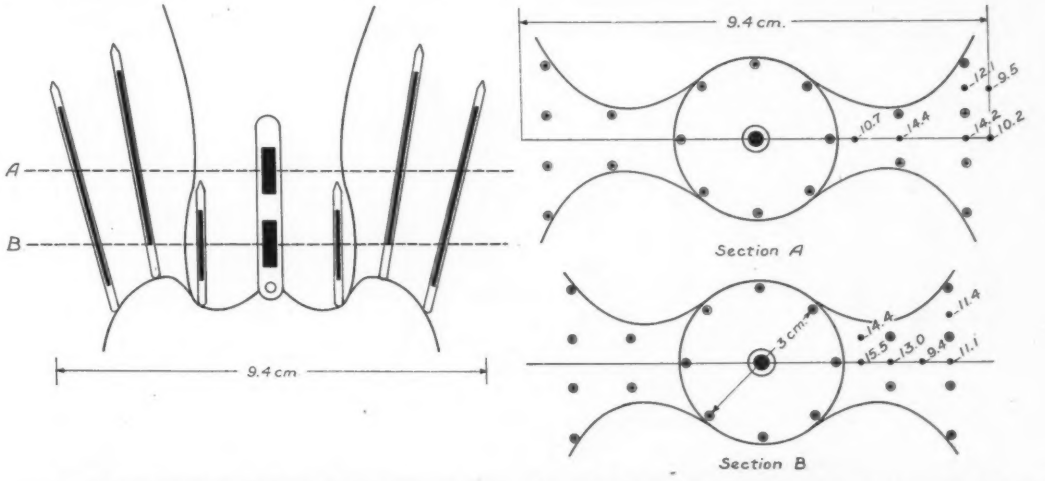

FIG. 2. Modification of the Pitts and Waterman low intensity radium needle technique used for treatment of cases of cancer of the cervix in which vaginal or parametrial extensions are present. The applicators remain in place for seven days and the figures on the drawing when multiplied by 1,000 represent the large doses delivered well out in the parametrium. The schematic drawings of the cervix show the needles in place. The drawings at the right show cross sectional views of the drawing at the left at the designated positions.

TECHNIQUE

Our technique is unorthodox, but our high five year salvage and the elimination of practically all serious irradiation sequelae have led to its adoption. The first procedure in every instance is carried out under sodium pentothal anesthesia. The cervix is visualized through a bivalve speculum and the tumor and vaginal walls are thoroughly scrubbed with copious amounts of liquid soap, after which the entire field is painted with tincture of iodine. Since this preliminary preparation has been used the incidence of secondary infection has been reduced to a minimum. Tissue is then removed for biopsy studies and all presenting masses of the tumor are removed by electrocoagulation with a long insulated electrode attached to a pistol grip. Although this procedure is looked upon with disfavor by some, it has produced few postoperative complications in our hands. A warning should be sounded against the employment of deep coagulation within the cervix since a secondary slough may produce severe hemorrhage. In the event that this complication is encountered and the bleeding cannot be controlled by simple measures, ligation of both hypogastric

TABLE 7.—*Cancer of Cervical Stump Followed from One to Nine Years.*

	Total Cases	Dead	Alive With Disease	No Evidence of Cancer	
				No.	%
Hysterectomy less than 1 yr. before treatment	14	9	3	2	14.2
Hysterectomy more than 1 yr. before treatment	15	6	0	9	60.0
Total	29	15	3	11	37.9

arteries should be carried out immediately.

The advantages of the preliminary coagulation are as follows: (1) bleeding is stopped immediately and all radium applications may be carried out in a dry field; (2) the location of the cervical canal is in most instances rendered easy; (3) the residual malignant tissue is made more accessible for the accurate approximation of radium applicators thereby lessening the total radium dosage required; and (4) the coagulated area shrinks constantly for five or six days so that the field requiring treatment becomes steadily smaller.

In each case an attempt is made to apply radium containers in intimate contact with the malignant tissue known to be present, but as a rule some modification of two main techniques is used.

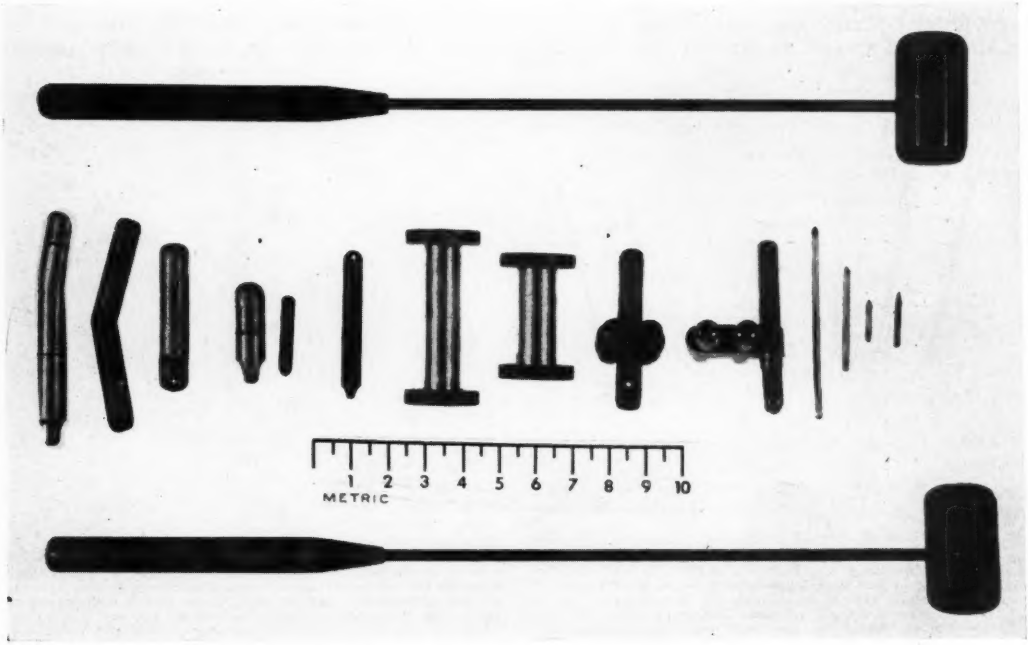

FIG. 3. Various types of capsules, spools, and radium needles used in carrying out the techniques described in this paper.

When the tumor is limited to the cervix and no evidence of extension can be detected, the radium technique illustrated in figure 1 is started. While the patient is still anesthetized a heavily filtered platinum capsule containing two 25 mg. radium compartments is inserted into the cervical canal and left in place for thirty hours (1,500 mg. hours). Packing must be placed in the vagina in such a manner that the capsule cannot possibly slip down and come in contact with the posterior vaginal wall. On the third day two 25 mg. London spools are placed vertically in the vaginal vaults, packed well apart with gauze, and left in place for twenty-six hours (1,300 mg. hours). These spools are held in position by detachable handles while the packing is inserted. Vaginal therapy given in this manner is preferable to that obtained with a colpostat, particularly in a vagina having an abnormal configuration. On the sixth day a T-applicator having two 25 mg. radium capsules placed vertically on either side of a dummy cervical capsule is placed so that the active capsules are in intimate contact with the central portion of the face of the cervix and left in place for from twenty-four to twenty-six hours (1,200 to 1,300 mg. hours). When the cervical canal is eccentrically located, the two active capsules are attached to the same side of the dummy capsule.

When the tumor on the face of the cervix is large and has an odd shape, a similar dose is given with a plaque containing a group of 6.25 mg. radium capsules made up so that the area involved is evenly irradiated. This technique administers a total of from 4,000 to 4,100 mg. hours in seven days and delivers not less than 6,000 gamma r to the cross-hatched area shown in figure 1. Vertical sections of uteri containing fairly well advanced carcinoma of the cervix show them to have

shapes similar to this crosshatched area, and experiments conducted in our clinic have shown, as suggested by Paterson and Parker,[5] that doses of 6,000 gamma r are capable of completely destroying most squamous cell carcinomas of the skin when they are administered in a period of seven days.

This therapy is slightly augmented by doses of 600 x-ray r, measured in air, given with 200 kilovolt equipment to each of four 15 by 15 cm. portals laid out over the front and back of the pelvis during the seven days of treatment. The skin target distance is 50 cm. and a filter of 0.5 mm. of copper and 1.0 mm. of aluminum is used. As a rule these treatments are given so that they fall between the radium applications. The multiple radium applications are preferred to the use of any of the rather elaborate multiple capsule devices which are designed to place all of the radium sources at one time because it is a more flexible method and better approximation is possible. This procedure can be completed in one week. The results in early cases are excellent and no sequelae are produced. If after six weeks any suggestion of parametrial invasion can be detected, a total of 2,000 x-ray r is added to each of the four portals previously irradiated at the rate of 200 r to each of two portals each day, but we are not certain that this added therapy has made any real difference in the end results.

If at the first visit definite parametrial invasion or extensive vaginal involvement can be demonstrated, a modification of the Pitts and Waterman[6] low intensity radium needle technique is substituted for the method previously described. The needles used in our clinic have active lengths of 1.5 and 4.0 cm. and contain from 0.66 to 0.88 mg. of radium per centimeter of active length. They are made of platinum and have a wall thickness varying from 0.5 to 0.6 mm. The advantages of these needles and the methods used for dosage calculations have been described in detail in previous papers.[1, 2]

In many cases a long capsule with full filtration containing two 12.5 mg. radium compartments is placed in the cervical canal and the needles are planted in the demonstrable malignant tissue so as to deliver doses ranging from 6,000 to 12,000 gamma r to all of the cancer cells in a period of seven days. This dosage range has been proved effective and safe in the treatment of epidermoid carcinoma of the face and mouth. Corscaden has recently demonstrated that effective doses can be safely extended in the parametria to the lateral walls of the pelvis with such needles planted through the vaginal walls, and dosage determinations for one such implantation are illustrated in figure 2. Since these low intensity needles have been used effectively without the production of serious sequelae in the treatment of cancer of the bladder and rectum, the desirability of their use in advanced cancer of the cervix is obvious. Moderate doses of roentgen rays may be given to the sides of the pelvis along with the needle implantation, but none

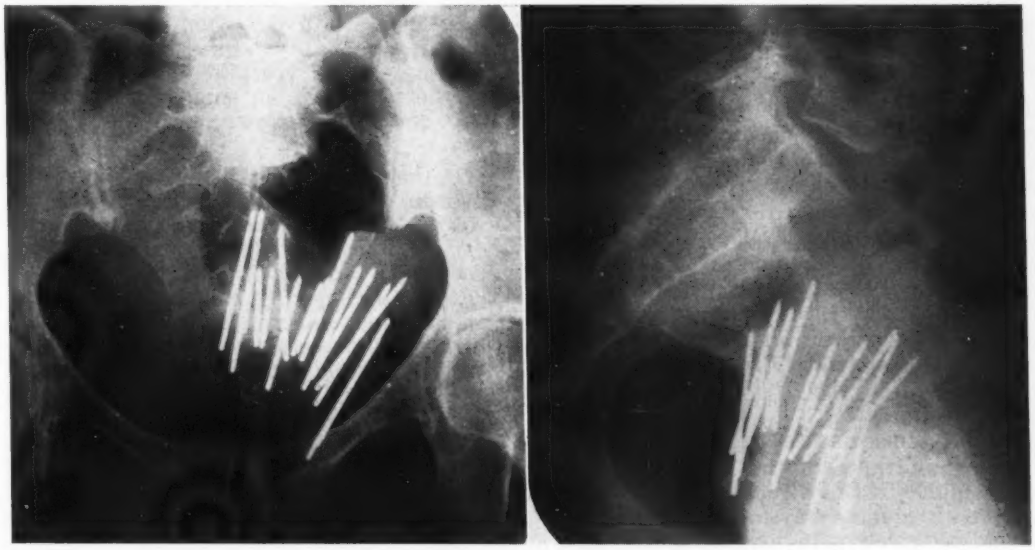

FIG. 4. Low intensity radium needle implantation carried out in a case of cancer of the cervix with marked extension into the left parametrium treated soon after a subtotal hysterectomy had been done in another clinic.

should be given to the region of the rectum or bladder. When residual carcinoma can be detected outside the irradiated field, intensive roentgen-ray therapy may be administered to the involved regions after a rest period of from six to eight weeks, but such therapy is looked upon as a palliative procedure.

Since an effective combined use of low intensive radium needles and roentgen rays has been developed in our clinic for the treatment of metastatic lymph nodes in the neck, it seems possible that some similar plan may be worked out for metastatic nodes in the pelvis. Encouraging results have been obtained in a few such cases, but the material available is not yet large enough for an accurate determination of the effectiveness of the procedure to be made.

DISCUSSION

The techniques described above have been developed slowly and with much care, and a discussion of the underlying principles involved may be of some interest. In our experience the most satisfactory results are obtained when at the first visit an efficient plan of treatment is developed and this plan is carried out in a reasonably short time and no subsequent therapy is given. When a cure is possible, the first procedure should be planned to eradicate all malignant cells because a second trial of irradiation is never so successful as the first and the likelihood of producing ill effects are much greater when large doses are used a second time.

The importance of the time factor has been emphasized in a recent paper.[3] In general, both gamma rays and roentgen rays should be given with low intensities and a fairly long time factor. When a combination of roentgen rays and radium therapy is given over a period of four or five weeks, the accurate estimation of biologic effect becomes almost impossible. High intensity radium sources are dangerous and for that reason no capsule sources larger than 25 mg. are used in our clinic. Some of the serious sequelae reported in the literature have resulted from the use of capsules containing 100 mg. or more for short periods of time.

It is also important that only gamma irradiation be used and that all sources have adequate filtration. For this reason radon seeds have no place in the treatment of cervical lesions. High intensity capsules should never be placed in the fundus of the uterus because loops of small intestine frequently lie in close proximity to the upper uterine cavity. However, weak sources left in place for seven days may be used with safety.

The walls of the cervix and uterus, which are quite radioresistant, will withstand large doses, but the mucosae of the bladder and rectum, which are situated near to the vaginal walls, are easily damaged. In the vagina distance applicators provide the greatest factor of safety. Contraction of the upper vagina makes it necessary to reduce the amount of radium used in this region. This fact constitutes my chief objection to the preliminary use of large doses of roentgen rays which produce marked shrinkage of the vaginal walls.

Large doses of roentgen rays given just after or just before the use of an efficient radium technique place a heavy load on the rectum and bladder and a recovery period should be allowed to elapse between the two procedures. With the combined techniques used in our clinic it seems best to use only moderate doses of roentgen rays and depend for the most part on small radium sources well distributed throughout the involved area.

On the basis of experience certain criteria governing the use of roentgen rays have been evolved. It should be remembered that greater damage to internal structures can be produced with large than with smaller portals, and most radiologists believe that late bone damage, particularly spontaneous hip fractures, have appeared most frequently in patients receiving roentgen therapy through lateral portals directed through the trochanters. This complication has also been observed in patients who have received several intensive series of roentgen-ray treatments spaced a few months apart. It is our custom never to repeat an intensive course of deep roentgen therapy in less than eight months and lateral portals, which really add little to the dosage delivered to the sides of the pelvis, are never used.

Intravaginal roentgen-ray therapy has recently become popular in certain clinics and it undoubtedly is a useful procedure. When the uterus is in a normal position, the intravaginal cone tends to assume a position which allows much of the roentgen-ray beam to strike the anterior rectal wall, and the radiologist must exert much care in directing the cone upward towards the parametrium if rectal damage is to be avoided. I believe as do Pitts and Waterman and Corscaden that the parametrium can be more efficiently irradiated with low intensity radium needles, and this technique eliminates the daily troublesome and rather uncomfortable procedure of inserting the vaginal cone properly.

SUMMARY

During recent years irradiation techniques have been improved so that the five year salvage rate for cancer of the cervix lies between 35 and 40 per cent of all the cases treated. Although many radiologists believe that such a high salvage necessitates a high incidence of irradiation sequelae, techniques which have yielded an absolute five year salvage of 38.6 per cent without the production of serious irradiation sequelae are presented in this paper.

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ABSTRACT OF DISCUSSION

Dr. Palmer E. Wigby, Houston: Dr. Martin has probably contributed as much to the improvement of radiation therapy in general as any radiation therapist of our time. He, as well as the rest of us, needs checking and occasionally double checking.

When he says an extensive tumor of the pelvis will shrink materially from his removal by cautery knife of the protruding portion of the tumor, I believe that he is not conveying the proper impression. He implied in his paper that he produced shrinkage of cancer in the lateral pelvic areas by this procedure. It is one of the cardinal principles of surgery that manipulation of tissues opens lymphatic channels and promotes spread of both tumor cells and infection. Cancer cells in lateral areas remain viable and the chances of spreading these cells from this procedure, plus the implantation of radium needles and capsules, must be assumed to be great. If he cauterizes deeply, he admits himself that there is danger of late slough and possible massive hemorrhage. This also favors the development of pelvic infection.

It is for these reasons that I consider it to be far more rational to administer a full series of roentgen-ray treatments before any surgical manipulation or radium implantation is performed except in the earliest cases, which are in the great minority. Radium implanted after the roentgen-ray reaction has passed its maximum point, a week or ten days following completion of the roentgen-ray therapy, will have a far better chance of reaching tumor cells in lateral pelvic structures. Within this time limit there is no significant contraction of the vagina and the cervical canal can always be found with ease. Radium sources will usually be closer together, but by the use of careful tight packing there is no greater danger to the rectum or bladder. The radiologist can be completely certain that the radium under those circumstances will be more effective in reaching more tumor cells because the entire tumor is smaller in all areas. Furthermore, there has been a high degree of devitalization of all tumor cells within the pelvis, so that dissemination of tumor cells is possibly made less a hazard. Also, all edema of pelvic structures has been cleared up and it is well known that water has a high coefficient of absorption for radiation.

Another important advantage in this technique is that only one or two implantations are necessary. All sources within the uterine cavity, cervix, and fornices can be applied at one time if the radiologist wishes. I usually apply only the uterine and cervical applicator or applicators first and when they are removed, the spools are packed into each lateral fornix vertically. Some pain is experienced from the latter procedure, although the time consumed for its completion is so short that a general anesthetic is seldom used. If a hypodermic injection is given before the manipulation, few patients complain about the discomfort attending the packing of the spools. This method avoids the multiple implantations used by Dr. Martin, and by using moderate amounts of radium in each source the radiation can be safely prolonged over about the same period of time.

Dr. Martin's recommendation that the limit of safe dosage be administered at the outset deserves commendation and strong emphasis. It is one of the fundamental principles of good radiation therapy. Secondary radiation treatment, no matter when it is given, is of limited value and is practically always only palliative.

While I have not tabulated carefully my results over the past seven years, fairly accurate estimates show that the number of five year cures will compare favorably with those of Dr. Martin. Both methods will certainly yield good results. It has been my observation that the majority of patients who continue to decline and die within the first year or two either have too extensive disease or are handicapped by other factors which militate against a good result no matter how carefully and thoroughly the primary radiation treatment is administered.

With the present technique and dosages used in our hospital we see no significant complications from the radiation per se. I can remember only one significant severe radiation proctitis, which occurred about one year following treatment and could be traced back definitely to faulty packing.

SUBACUTE BACTERIAL ENDOCARDITIS

Penicillin controls subacute bacterial endocarditis in approximately three-fourths of patients, report two New York physicians in the November 6 issue of *The Journal of the American Medical Association.*

Subacute bacterial endocarditis usually attacks young persons between the ages of 20 and 30, and it is often preceded by rheumatic fever. Bacteria, attacking the lining of the heart, are usually those of the streptococcus group. Until the discovery of the sulfa drugs, the disease was nearly always fatal. Treatment with sulfa drugs achieved a cure in about 5 per cent of patients.

The physicians making the recent report—Albert C. Herring and William M. Davis, of the Medical Service, St. Luke's Hospital—say that they were able to control the infection in thirteen of eighteen patients treated with penicillin. A four-weeks course of treatment was given to most of the group.

TUBERCULOSIS HOSPITALS NEED DOCTORS

One hundred full-time doctors are needed for duty in Veterans Administration tuberculosis hospitals throughout the nation, and interested physicians are invited to apply to the Chief Medical Director, Veterans Administration, Washington 25, D. C. The salary range for the positions now open is from $4,479 to $10,305 annually.

PROGNOSTIC SIGNIFICANCE OF THE VAGINAL SMEAR AFTER IRRADIATION OF UTERINE CARCINOMA

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WILLIAM PAUL LOCHTE, M. D.
and
W. W. COULTER, SR., M. D.
HOUSTON, TEXAS

The methods of roentgen therapy for the treatment of carcinoma of the cervix have been determined on the survival rates of one group compared to the survival rates of another group which have been treated differently. If a practical method could show that at the end of treatment a satisfactory or unsatisfactory result could be expected, instead of the necessity of waiting for a five year survival rate, the number of cures might be appreciably increased by a modification of the present methods of treatment. We have attempted to correlate the study of the response of cervical and uterine carcinomas to radiation treatment by means of the vaginal smear.

Many studies have been done in an attempt to determine the prognosis of various modes of treatment. In 1936 Warren, Meigs, and Severance correlated biopsy data with possible prognostic value. They published a series of 70 cases of carcinoma of the cervix studied by means of repeated biopsies during radiation treatment. They found that the histologic grade is of less importance in prognosis than the clinical classification. They also demonstrated that if the tumor showed marked radiation effect and there were changes in the stroma consistent with radiation reaction, the survival rate was increased. If, however, the tumor showed little effect and the stoma little or none, the patients did poorly.[6]

In 1940, Stewart and Farrow attempted to correlate the grade of the tumor with the clinical response and reported that there was a marked difference in the response to roentgen ray and radium by the same grade tumors. In their opinion single biopsies were not valuable in judging the actual response. They concluded that a more satisfactory prognosis could be made on the basis of the clinical type of tumor.

Arneson and Stewart in 1935 made serial biopsies throughout the course of treatment by roentgen irradiation. They followed the histologic process of regression and made comparisons between the histologic changes and the degree of clinical regression. They found, with but few exceptions, that the percentage of satisfactory clinical regressions parallels the increase in the doses, and that the histologic regressions tend to parallel the clinical regressions. From their study an increase of parametrial dose was decided upon, and the percentage of five year survivals increased.[1]

The latest attempts to determine prognostic significance have been by the use of the vaginal smear. Gates and Warren in 1947 correlated postradiation smears with the clinical and biopsy data. They found that in 74 per cent of cases the diagnosis conformed with other data, while 16 per cent did not conform.[3]

Late in 1947 Ruth Graham described the effect of radiation on the cells seen in vaginal secretion of patients with carcinoma of the cervix. In a later work she attempted to correlate these findings with the clinical picture and the end result of treatment. This was the first real attempt to give a prognosis by a relatively simple method—the vaginal smear. It is true that occasionally a biopsy is impractical or cannot be obtained, whereas a smear can be quickly and easily performed. Her work involved a cell count of the malignant cells present. She noted a decrease in number as the tumor responded. The rate of dimunition was rapid in those tumors which have a good prognosis, and slow or absent in those cases which have a poor prognosis.[4] The cell count is not a difficult or time consuming procedure; however, the interpretation of the radiation effect on individual cells is difficult to determine, even for experienced personnel.

JEFFERSON DAVIS HOSPITAL STUDY

Our cases selected for study are from the Gynecology Section of the Cancer Clinic of the Jefferson Davis Hospital, and are from a series of patients who have been treated during the past ten years and have returned for follow-up study. From the period 1938 to 1948 there have been 357 cases of carcinoma of the cervix. Of those, 62 have returned for recheck and further treatment. A vaginal smear has been made routinely on each new and old admission since March, 1947. Biopsy was done on each new case and on all old cases whenever possible. Smears were made daily during the course of treatment, and biopsy at the end of treatment of all new cases during the past year. The technique of obtaining the smear and staining the smear is according to the method advocated by Papanicolaou.[5]

From the Department of Pathology, Jefferson Davis Hospital.
Read before the Section on Clinical Pathology, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

The effect of radiation on the cell content of the vaginal smear was reported by Warren and Graham.[3] The cell content and changes will vary with the amount and type of radiation and the interval of time after treatment. Not all the cells, whether benign or malignant, will be affected in the same way. Many cells will die. Some will show structural changes, while others will remain apparently unchanged.

There are five types of reaction to consider: necrosis, distortion of cancer cells, abnormalities of benign cells, the effect of ovarian atrophy, and histiocytic reaction. The effects of necrosis are seen during and for a short time after radiation and are evidenced by cellular debris, polymorphonuclear leukocytes, and so forth. Some cancer cells, instead of disintegrating, appear more malignant than formerly. Abnormal mitosis leads to huge bizarre forms. Multinucleolate giant cells may appear. These distorted cells may appear for several months after treatment. The histiocytic reaction is extremely marked after radiation and is especially so after the acute reaction has subsided. These may persist for several years. Markedly hypertrophic granular nuclei and large nucleoli are striking characteristics of some histiocytes and may cause them to be mistaken for malignant cells.

From the foregoing it can be realized that the recognition of radiation reaction is necessary if the smear is to be employed to determine the success of treatment. However, extensive intrapelvic growth does not necessarily involve the surface epithelium, and unless it does, cells will not appear in the vaginal secretion. It has been our impression that the smear is less reliable than the clinical observations in determining the success of treatment in spite of the difficulties involved in the evaluation of postradiation changes in epithelial and tumor cells.

We have followed 47 cases of uterine carcinoma and have obtained smears before, during, and after radiation. Of these 47 patients, 32 are now clinically cured following treatment. Eight of these patients had had a hysterectomy and only one showed malignant cells on the smear which were found to be from a carcinomatous extension into the vaginal stump.

There are 15 patients who still have the disease clinically. Eight of these had a positive smear for malignancy. If 2 cases which had a clean cervix but metastases to the lungs and parametrium can be excluded, we have an accuracy of 66 per cent with the vaginal smear following radiation, compared to an accuracy of 94 per cent before radiation.[2]

There are 7 false positive smears which were reported as containing malignant cells and in which the patient was free of the disease clinically. These patients are being rechecked and subjected to biopsy and are asked to return more frequently for follow-up to determine if malignancy is going to make itself clinically evident. To date, all are still free of the disease, the oldest case being eight years.

An attempt to correlate the evidence of radiation reaction on the smear with the clinical condition of the patient was made. Thirty patients had smears which showed definite radiation reaction. Of these 30 patients 20 had no evidence of the disease. Of these 20 who had no evidence of the disease, 5 showed smears with a marked radiation reaction. Of the 10 who had the disease only 1 showed a marked radiation response.

We were unable to justify the use of the Papanicolaou smear in our series of cases as a means of evaluating the response of the patient to radiation. We believe that the poor results obtained are due to the following reasons:

1. In cases in which the carcinoma has invaded or metastasized and the epithelium has healed over, there are no malignant cells obtainable by the smear method and the diagnosis must be made clinically.

2. The interpretation of the smear is made much more difficult by the changes which occur in the normal cells as well as in the malignant cells because of radiation. We believe that the interpretation of postradiation smears with a high degree of accuracy could be done only by a person devoting full time to this work. It is not a procedure which would be of special value as a routine follow-up in the average hospital.

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ABSTRACT OF DISCUSSION

Dr. Karl John Karnaky, Houston: I have been interested in the detection of cancer by cervical and uterine smear for the past five years and believe it

is a valuable adjunct to early diagnosis of cancer of the cervix and uterus. I believe technicians should be trained to screen these cancer smears just as they are trained to recognize plasma, eosinophils, white blood cells, and other cells in other laboratory tests.

I believe every doctor who sees women patients should learn to read his own cancer smears, because by so doing he would discover early cancer, and if we treated cancer early we would save many lives. Routine aspiration and scraping smears are made on every gynecologic patient who comes to my office. One of the trained technicians screens the smears, and then I check all suspicious and positive smears. By doing this I have found 12 cases of early cancer of the cervix which would not have been found if routine cervical and uterine smears had not been made.

Smears done routinely are of more value to me than a lot of other routine tests we are doing today.

Cancer smears after roentgen ray and radium are of most value to me, although the essayists did not find that to be true in their study. I believe in time we will find the smear to be of value after roentgen ray and radium.

ABUSES AND USES OF DES STILBESTROL IN OBSTETRICS AND GYNECOLOGY

WITH FURTHER REPORT ON TOXICITY

KARL JOHN KARNAKY, B. A., M. D.
HOUSTON, TEXAS

Stilbestrol has been used successfully for so many conditions in gynecology and obstetrics that an increasing number of physicians are prescribing the drug. Since the use of stilbestrol has been widespread, many abuses have occurred. It may be that the abuses of this drug have been in some cases due to lack of information concerning its uses. Because so many physicians have asked frequently for detailed directions for administration of stilbestrol in various conditions in gynecology and obstetrics, a concise form has been prepared and is presented herein.

In May, 1937, in the research department at the Jefferson Davis Hospital I started studying stilbestrol and have studied this drug continuously since. Stilbestrol has also been used for the past seven years in my own private practice.

TOXICITY STUDIES

If stilbestrol is abused by large and irregular doses, could a patient be injured by this drug?

Shute stated that women who have prolonged bleeding and coagulation times usually have high blood estrogen. He concluded that stilbestrol might lower the platelet count and cause purpura and some damage.

From the Department of Gynecology, Research Division, Jefferson Davis Hospital and Baylor University College of Medicine. Permission to do this work was granted by the Research Committee, Jefferson Davis Hospital.

Read before the Section on Obstetrics and Gynecology, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

To prove or disprove this contention, a series of tests were performed in our laboratory. Des stilbestrol was given to 163 consecutive patients in varying dosages. From 0.7 to 400 mg. was given to 217 patients, from 401 to 5,000 mg. to 36, and from 5,001 to 200,000 mg. to 43. Table 1 summarizes the results of laboratory tests performed on 65 of the patients who received large doses of stilbestrol, together with results of tests on 25 consecutive patients who received no stilbestrol medication.

From these studies it appeared that there was no harm produced by even large and unphysiologic doses of stilbestrol other than nausea and vomiting which passes off in most cases if the drug is continued.

Table 2 gives suggested uses and dosages of stilbestrol. The drug is used in most conditions where there is estrogenic deficiency.

It will appear from table 2 that stilbestrol is given for almost every condition of estrogenic deficiency in gynecology. Almost all hormones given so far, such as pregnant mare's serum, male hormone, gonadotropes, anterior pituitary-like hormone, combined

TABLE 1.—*Dosage and Results of Laboratory Tests of 65 Patients Taking Large Amounts of Des Stilbestrol.*

	Total	Average
No. milligrams des stilbestrol taken	1,878,630	28,902
No. days of medication	11,765	181
Average dose per day (mg.)	13,788.45	212.13
No. complete blood counts taken	845	13

	Results of Laboratory Tests	
	Average during Des Stilbestrol Administration	Average without Des Stilbestrol Administration*
Red blood count	3,572,315	3,865,900
White blood count	7,101	6,112
Platelet count	252,496	261,457
Hemoglobin	71.8%	78.1%
Sedimentation rate	12 mm. per hr.	6 mm. per hr.
Coagulation time	2 min. 44 sec.	2 min. 49 sec.
Bleeding time	1 min. 51 sec.	1 min. 46 sec.

Note: Most of the patients receiving des stilbestrol were uterine bleeding patients, so that the red blood counts and hemoglobin determinations of those receiving medication were slightly lower than for the controls.

*These figures represent 25 consecutive patients receiving no des stilbestrol medication.

gonadotropins (Synapoidin), and anterior pituitary sex hormones, have been of comparatively little value. Estrogens have been successfully used in more gynecologic conditions than any other drug. It is more reasonable in cost, is easy to give, and produces better results.

It is my personal opinion, not yet substantiated by enough scientific data, that most menstrual disorders are due to deficiency in or a low continuous level of estrogen, rather than to hyperestrogenism.

Baker and Everett demonstrated that the daily injection of stilbestrol in doses ranging from 0.05 to 5 mg. for periods of from four to seven days into 25 day old female rats

TABLE 2.—*Suggested Uses and Dosages of Des Stilbestrol.*

In the child.

Vulvovaginitis.—1.0 mg. nightly at 9 p.m. for from 60 to 100 nights. This amount causes the labia and vagina to approach adult characteristics and so become very resistant to infections. The changes disappear after the drug is discontinued. Bleeding may be produced in some cases.

At puberty.

Flooding and menstrual irregularities.—1.0 mg. nightly at 9 p.m., increased by 1.0 mg. every third night for from 3 to 6 months, during which time the patient is made amenorrheic. If bleeding begins during this period, 15 mg. is given every 15 minutes until bleeding stops. This procedure usually corrects most menstrual conditions at puberty. An alternate dosage is 0.5 to 1.0 mg. nightly for 26 nights, none for 3 nights, repeated over and over for 3 months. If bleeding begins during the 26 nights, from 1 to 5 mg. is taken every 15 minutes until bleeding stops.

Amenorrhea.

Primary.—0.2 to 1.0 mg. every night at 9 p.m. for 26 nights, none for 3 nights, repeated over and over for 3 months. If no results are obtained, the medication is repeated for another 3 months. An alternate dosage is 0.2 mg. for the first 26 nights, increased to 0.4 mg. every night for the next 26 nights. If there is no bleeding, the dose is increased to from 0.6 to 1.0 mg. nightly for 26 nights. Thyroid is given to tolerance and 1 lipoiodine tablet is given daily for 60 days. If no results are obtained, increasing doses are given for from 3 to 6 months.

Secondary.—Same as for primary amenorrhea.

Hypomenorrhea and oligomenorrhea.—Same as for amenorrhea, except that stilbestrol is started on the first day of menses and given for 26 nights, stopped for 3 nights, and repeated over and over for 3 months.

Hypoplasia of uterus.—0.5 mg. for 2 nights, increased by 1.0 mg. every third night for from 4 to 6 months. The patient is kept amenorrheic. If bleeding begins, from 10 to 25 mg. is given every 15 minutes until bleeding stops. Pseudopregnancy is produced.

Dysmenorrhea (functional).—0.5 to 1.0 mg. beginning on the ninth day of the cycle is given for 14 days. The medication is repeated for from 3 to 6 months.

Menstrual migraine headaches.—Treated like dysmenorrhea for 3 months. If no results are obtained, amenorrhea is produced for 3 months by giving 0.5 mg. nightly, increased by 1.0 mg. every third night. From 10 to 25 mg. is given every 15 minutes if bleeding begins, but the dose is still increased by 1.0 mg. nightly. As a supplement, codeine, grain ¼, is given every 30 minutes until headaches are controlled.

Ill feeling of menses.—Treated like dysmenorrhea. If no results are obtained, amenorrhea is produced for from 3 to 6 months.

Painful engorgement of breast.—1.0 mg. at once and nightly for 5 nights.

Induction of labor.—No results obtained; not advocated.

Missed abortion.—25 to 100 mg. 4 times a day until the product of conception passes, usually by the seventh day.

Uterine inertia with bleeding.—250 mg. (10 cc.) intramuscularly, 100 mg. (4 cc.) injected into the anterior wall of the cervix (if possible), and 50 mg. every 15 minutes by mouth. If this medication is not possible, 250 mg. (10 cc.) in oil is given in each buttock while the patient is prepared for uterine packing.

Threatened abortion.—If severe, 250 mg. (10 cc.) in oil in each hip. If mild, 250 mg. (10 cc.) intramuscularly and from 50 to 200 mg. by plain tablet every 15 minutes until bleeding, pain, or cramps stop, then 50 mg. 3 times a day and at bedtime for 7 days. If signs or symptoms recur, from 50 to 200 mg. by tablet every 15 minutes until all signs and symptoms stop. After 4 to 8 weeks of intensive stilbestrol therapy, from 25 to 50 mg. is given every morning. The drug is given any time signs or symptoms recur. Stilbestrol is given to the eighth month of pregnancy. No progesterone of any kind has been found necessary. Most patients can become ambulatory in about 3 to 7 days.

Bleeding from incomplete abortion.—250 mg. (10 cc.) intramuscularly and from 25 to 200 mg. in plain tablets at once and 100 mg. every 15 minutes until bleeding stops, then 50 mg. 3 times a day and at bedtime for 1 week. Also 2 ergotrate tablets are given at once and 1 every 2 hours for from 6 to 12 doses.

Habitual abortion.—As soon as the patient misses menstruation for from 3 to 7 days, or if the basal temperature suggests pregnancy as early as 2 days after menses is delayed, 25 mg. is given daily with from 50 to 200 mg. by tablet every 15 minutes until all signs and/or symptoms of the threatened abortion are stopped. The patient is then treated as for threatened abortion.

Operation during pregnancy to prevent abortion.—250 mg. (10 cc.) intramuscularly immediately and 50 mg. 3 times a day and at bedtime. If abortion threatens, the patient is treated for that.

Test for pregnancy.—15 to 25 mg. in plain tablets at 9 p.m. If there is no nausea or vomiting within 6 hours, the stilbestrol test is positive for pregnancy.

Pseudopregnancy.—1 mg. every night at 9 p.m. until the patient bleeds. This procedure usually requires from 10 to 30 days.

Hormonal nausea of pregnancy.—5 mg. 3 times a day, increased by 5 mg. each dose every day until nausea is controlled. This procedure usually requires from 7 to 14 days and is fairly successful.

Toxemia of pregnancy.—100 mg. every 3 hours until the condition is controlled, then 100 mg. 3 times a day.

Diabetes and pregnancy.—4 25-mg. tablets 4 times a day.

Pregnancy and hypertension.—4 25-mg. tablets 4 times a day.

Excess saliva during pregnancy.—25 mg. 3 times a day and at bedtime, increased by 25 mg. 3 times a day and at bedtime every fourth day until the condition is controlled.

Premature labor.—200 to 400 mg. daily and 100 mg. every 15 minutes until labor pains and bleeding are controlled.

Large myomas and pregnancy.—100 mg. daily as soon as pregnancy is determined and 200 mg. daily during the last month of pregnancy.

Late accidents of pregnancy.—50 mg. every morning for prophylaxis starting at the sixth week of pregnancy.

Constant serosanguinous secretion from the vagina following delivery.—0.1 to 1.0 mg. nightly for 20 nights. If the dose is too large, milk will be reduced or stopped.

Severe bleeding two weeks or more after delivery.—50 mg. by plain tablet every 15 minutes until bleeding stops and then 25 mg. nightly for from 20 to 30 nights. If there is mild bleeding, 1.0 to 5.0 mg. is given every 15 minutes until bleeding stops and then for from 20 to 30 nights.

To dry up breast after delivery.—1.0 mg. nightly for 5 nights.

Dysfunctional uterine bleeding below age 35.—Cancer should be ruled out before stilbestrol is given. Menorrhagia, menometrorrhagia, flooding, and metrorrhagia are types of noncancerous uterine bleeding which occur below the age of 35.

Mild bleeding or no bleeding.—0.5 mg. every night at 9 p.m., increased by 1 mg. every third night for 26 nights, none for 3 nights, and repeated. Thyroid (Armour) to tolerance, lipoiodine every morning for 60 mornings, and B complex concentrate (Armour) 1 tablet 3 times a day until 60 are given.

Moderate bleeding with the patient in good condition.—1 mg. every night at 9 p.m. for 26 nights, none for 3 nights, and repeated. Also thyroid, lipoiodine, and B complex concentrate.

Severe bleeding.—250 mg. (10 cc.) injected into the anterior wall of the cervix, using a large spinal needle and 10 cc. syringe. 5 mg. by mouth nightly for 26 nights, none for 3 nights, and repeated. If bleeding occurs during the 26 days, stilbestrol is given every 15 minutes to keep the patient amenorrheic. Thyroid, lipoiodine, and B complex concentrate are given. 2 ergotrate tablets are given at once and 1 every 2 hours for from 6 to 12 doses. If the patient is at home and calls, 2 ergotrate tablets at once and 1 every 2 hours are prescribed. Also prescribed are 5-mg. plain stilbestrol tablets to be taken 50 mg. at once, 25 mg. every 15 minutes until bleeding stops, and then 5 mg. nightly for 26 nights, none for 3 nights, and repeated for from 3 to 6 months. The patient is instructed to insert a ½ grain nembutal rectal suppository in the anus every 30 minutes until nausea and vomiting are controlled.

Bleeding associated with myomas.—100 mg. by plain tablet at once and 50 mg. every 15 minutes until bleeding stops. Within 24 hours dilatation and curettage are done to rule out carcinoma of the fundus. Cervical carcinoma is ruled out by inspection, Papanicolaou smears, and frozen section biopsy of the cervix. If cancer is found, stilbestrol should not be given after 24 hours.

Endometriosis.—If the patient is seen when menstruation is on and pains are severe, 250 mg. (10 cc.) in oil is injected into the anterior wall of the cervix and 5 mg. is given every night at 9 p.m., increased by 5 mg. every third night. Nembutal in ½ grain rectal suppositories is given for nausea every 30 minutes per rectum. If the patient is seen after the pain is over and the diagnosis of endometriosis is made by pelvic examination and history, 0.5 mg. is given for 2 nights and increased by 1.0 mg. every third night until 5 mg. is being taken, then 5 mg. is taken every night at 9 p.m., increased by 5 mg. every third night for from 4 to 6 months. When the patient has increased the dose to 25 mg., she can take only 1 small 25-mg. tablet; when she reaches 50 mg. daily, 2 25-mg. tablets. She may also take tablets 3 times a day to lessen the number to be taken at one time. If bleeding begins, 25 mg. is given every 15 minutes until bleeding stops. The patient should not be allowed to bleed during the 4 to 6 month interval.

Senile vaginitis.—0.1 mg. every night at 9 p.m. until the patient is well. The treatment usually requires from 7 to 14 days.

Microcystic ovaries.—0.1 mg. at 9 p.m. for 3 nights, increased by 0.5 mg. every third night until 1 mg. is being taken and then increased 1 mg. every night for from 30 to 60 nights. If bleeding starts, 15 mg. is given every 15 minutes until bleeding stops.

Sterility.—When husband and wife have been found to be normal, 0.05 mg. at 9 p.m. every night for 3 months. If no results are obtained, 0.5 mg. every night at 9 p.m., increased by 1 mg. every third night for 3 months. If bleeding starts, 15 mg. is given every 15 minutes until bleeding stops. If pregnancy supervenes, 25 mg. is given daily as a preventive measure against abortion.

Acute salpingitis.—To prevent tubo-ovarian abscess, 5 mg. daily for 60 days.

As diagnostic aid in some special ectopic cases.—250 mg. (10 cc.) intramuscularly in oil and 25 mg. 3 times a day and at bedtime. If bleeding is not stopped in 24 hours and the patient has no signs or symptoms except menstrual irregularities, the diagnosis of ectopic pregnancy is advisable.

Menopause.—Not advocated for any condition after menstruation ceases at menopause. It is in this period that stilbestrol is most misused.

caused changes in the pituitary gland characterized by (1) an increased weight of the gland, (2) increased mitotic activity in the acidophiles with an increase in their relative and absolute number, (3) hypertrophy of the golgi apparatus in the acidophiles, (4) degranulation and reduction in the number of the basophiles with no effect on their mitotic activity, and (5) reduction in the relative and absolute number of chromophobes with little change in their mitotic activity. Continuation of injections of 0.5 mg. daily for fourteen days resulted in a slight reduction in the number of acidophiles, an increase in the number of chromophobes, and an increase in the mitotic activity in both cell types. The investigators concluded that stilbestrol in the dosage they employed exerts a stimulative action on the acidophiles.

It has been shown in the rabbit that if all of the follicles except one were destroyed in the ovaries, ovulation did not take place in that one remaining follicle, yet there was present a normal amount of follicular stimulating hormone from the anterior pituitary gland. If estrogen was given the follicle grew, was extruded, and a normal corpus luteum was formed. It has also been shown that the development of the corpus luteum is dependent upon estrogen.

Smith and Smith have shown that stilbestrol stimulates the anterior pituitary gland, especially the luteinizing secretion (L. H. factor).

It has been shown that if certain fish are caught and their ovaries sprayed with estrogen after they have laid their eggs, they will again begin to ovulate and will then swim back and lay another set of eggs. The actual placing of estrogenic hormone on the ovaries of the fish leads to ovulation.

ABUSES OF STILBESTROL

Giving 0.5 mg. or more of stilbestrol per day to a patient past the menopause is one of the most common abuses of this drug. In these cases giving this drug leads to bleeding, and cancer must be ruled out if the patient continues to bleed after stilbestrol is discontinued. Stilbestrol should not be given to menopausal patients. Hexestrol 1 mg. and phenobarbital ¼ grain (Hexestrofen*) is superior and is advocated instead of all other hormones.

Another abuse is giving stilbestrol in uterine bleeding for two or three days and then stopping the drug, thereby producing withdrawal bleeding which is as bad as or worse than the original bleeding. Stilbestrol should be given for twenty-six nights before it is discontinued. If bleeding ever occurs during those twenty-six days, from 5 to 15 mg. should be given every fifteen minutes to stop the bleeding. If the patient is more than 35 years of age or if cancer is suspected regardless of the age, a careful dilatation and curettage and a biopsy of the endometrium and cervix should be done in a hospital to rule out cancer.

It is a mistake for the doctor to order discontinuation of stilbestrol because the patient is nauseated when she is bleeding. The drug should not be discontinued. The patient should be given ½ to 1 grain of nembutal every half hour until nausea and/or vomiting is controlled, instead of stopping stilbestrol. Rectal nembutal suppositories are ideal.

Another important abuse is giving stilbestrol for bleeding before examining the patient to see if some tumor is causing trouble or, more important, to see if a cancer of the cervix or uterus is present. Cancer should be ruled out as the cause of bleeding in every case.

CANCER AND STILBESTROL

As far as it has been possible to determine by biopsy and by making more than 1,000 cancer smears, stilbestrol apparently does not stimulate or make cancer cells in ulcers of the cervix after prolonged administration. *However, stilbestrol is contraindicated in cases of cancer of the breast or family history of cancer.*

CONCLUSIONS

After a continuous study for the past eleven years of a large series of charity cases and for seven years of private patients, it has been observed that stilbestrol is nontoxic even when given in large and unphysiologic doses.

It has been found that most menstrual irregularity, after cancerous tumors, polyps, and ulcers have been ruled out, has been due to a deficiency of estrogenic hormone. Stilbestrol, being unique in that it stimulates the pituitary gland, has given the best results in the treatment of menstrual irregularities and various ovarian deficiencies.

Tables are given showing blood determinations before and during stilbestrol administration. The blood picture was not altered from the control before and after stilbestrol, even when a total dosage of 181,960 mg. of stilbestrol was given to 1 patient over a period of less than one year. No case of purpura or serious toxicity has been encountered in these patients or any other patient of mine treated with stilbestrol during the past ten years.

*W. S. Merrell Company, Cincinnati.

No patient developed hemorrhagic purpura, nor did the abdominal or episiotomy incisions bleed more in those on whom operation was performed. It might fairly be concluded that stilbestrol produces little or no changes in the hematopoietic system in human beings when doses recommended in the literature are given. The platelet count was approximately the same before, during, and after stilbestrol, regardless of the dose.

Stilbestrol has given such favorable results that it appears to be an ideal drug for most gynecologic endocrine disturbances related to menstruation without using progesterone, anterior pituitary hormone, or other types of hormones with the exception of thyroid.

A table of the uses of stilbestrol, based on years of experience in the charity clinic and in a private practice, is given. The use of various endocrines other than stilbestrol is not advocated for treatment of menstrual disorders and other gynecologic conditions. Stilbestrol is advocated for many gynecologic endocrine disorders associated with ovarian deficiency, and it alone has given the best results.

Administration of stilbestrol in cases of cancer is discussed. There has been no stimulation of actual cancer tissue or production of cancer in my patients after long treatment with and unphysiologic and experimental doses of stilbestrol.

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ABSTRACT OF DISCUSSION

Dr. J. N. Burditt, Abilene: It is only by careful analysis of large groups of cases that significant observations can be made. This qualificaton makes it difficult for one whose experience is limited to clinical application of a form of treatment to discuss intelligently a paper of this type. Dr. Karnaky has made some significant observations, especially with reference to the nontoxic qualities of stilbestrol. It is interesting to note in the tables presented that in a large group of patients, some of whom have received massive doses of stilbestrol, there have been no appreciable changes in the blood picture.

I am more impressed by what has been said in regard to the uses of the endocrines in general and the limitation of their value than about the specific uses of stilbestrol, probably because my experience with stilbestrol has been limited. I have used it extensively and with excellent results in the reduction of engorgement in the lactating breast, as well as the nonlactating, tender, and painful breast from physiologic causes. Of the various uses of this drug that Dr. Karnaky has listed, particularly in the functional disturbances of menstruation, I believe his results are better than those of some other investigators because of his method of administration. Certainly in many of these conditions there is an estrogenic deficiency and good results may be expected by the intelligent administration of an estrogenic product. I am not willing to accept stilbestrol therapy as the method of choice in the treatment of incomplete abortion and salpingitis.

I do not think that stilbestrol should ever be used after the cessation of menstruation following the menopause, but I think one of the greatest abuses is the haphazard method of administration. Many physicians just give "shots" with no intelligent understanding of what they are attempting to accomplish physiologically.

EXAMINATION FOR STOMACH CANCER

Routine examination with roentgen ray is the only effective means for discovering the majority of stomach cancers at an early stage, according to Leo G. Rigler, M.D., of the department of radiology and physical therapy of the University of Minnesota, Minneapolis, writing in the August 21 issue of *The Journal of the American Medical Association.*

"The vast majority of persons coming to surgical treatment are in an advanced stage of the disease. Surgical cures of carcinoma of the stomach will continue to be infrequent unless the diagnosis is made before the development of any appreciable symptoms or physical signs," he observes.

As the incidence of the disease rises sharply after the age of 50, such an examination is especially desirable for persons over that age, Dr. Rigler says. For practical use of the examination on a wide scale, the group to be examined should be chosen by age and results of a preliminary test for gastric acidity, according to Dr. Rigler. If all persons past 50 were given a triple histamine test and a gastric analysis, and those for whom the analysis indicated a low gastric acidity were examined with roentgen-ray films, most cancers of the stomach could be discovered, he points out.

MEDICINE MEN AND DOCTORS

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The well of the past is deep and, some place in that fathomless depth lie the beginnings of the healing art which we now call Medicine. Its origin is shrouded with obscurity and we can only speculate as to how this profession first had its being.

Perhaps, in the dark, remote, paleolithic period, a stone age man sat in a dim cave, staring at a fellow creature. His mind was dull; the abstract had no existence for him; and it was only with a profound effort that he could remember two things simultaneously. However, he had spent days staring at this fellow cave-man and he had grasped the fact that this man was different. First, he could not go out to hunt and, second, he was distorted. After long and painful thought, the man had observed that the sufferer had a huge swollen abdomen, and, after thorough observation of others, it was apparent that this distortion was not the rule.

These facts he had grasped for some days, but the "why" eluded him. Suddenly, a flash of inspiration made the whole thing clear; a devil had obviously entered into his friend and was occupying the abdomen. More painful and labored mental agony resulted in a clear and definite conclusion; the devil must be let out. Here is a simple and logical thought process which a cave-man could grasp: There is a devil in my friend; my friend is suffering because of this; I must let the devil out. Seizing a flint knife and ignoring his friend's frantic and terrified protests, he sank the knife into the swollen abdomen, and the devil, in the guise of quarts of fluid, poured out.

Although the thinking was entirely irrational, the end result was desirable, and, for a time at least, the sick man was better after the first tapping for dropsy in all history had been performed.

Thus must have originated much medicine and surgery. We know that the ancient Egyptians and the Peruvian Incas opened the skull cavity. Since it is highly improbable that they recognized increased intracranial pressure, it seems likely that their motivation was not too different from that of the cave-man. Disease itself is old; even the dinosaurs suffered from arthritis, and the most primitive fossilized human skeletons exhibit malignant tumors and tuberculosis.

Read at a public meeting, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

Our first exact knowledge of medicine begins with the rise of the classical Grecian civilization in which medicine was closely integrated with the formal religion of the culture and was practiced by priest-physicians. The god Apollo was a physician, and the patron of physicians, and treatment of the sick was a combination of curious remedies, prayer, and burnt offerings. Out of this vague period emerged the first of the great physicians, Hippocrates, although an ancient Egyptian papyrus (about 1500 B. C.) has rather accurate directions for reducing a dislocation of the jaw. Hippocrates was the first teacher who attempted to separate medicine from magic and who relied on careful observation and logical deduction rather than on charms and incantations. His observations were so exact that they remain patterns today, twenty-five hundred years after he made them. His logic was not always so accurate.

The Romans were not physicians; indeed the calling was held too lowly for so noble a race. Nevertheless, although they practiced not, they were interested, and as long ago as 30 A. D., Celsus wrote a massive treatise in which he first named the four cardinal signs of inflammation so familiar to every medical student today. Two hundred years later Galen proclaimed the value of anatomy and of physiology. Dissection having become illegal, he carried out his experiments upon pigs, transferring his findings to human anatomy and perpetuating many errors. He was the first man to recognize that the arteries of the body contained blood, not air, but he had no idea that the blood was in motion.

By the tenth century, the center of medical knowledge had shifted to Arabia, where many learned treatises appeared including a classic on the cautery, one on the removal of stones from the bladder, and one on fractures and dislocations.

Medieval medicine can be passed over quickly. Generally speaking it represented a return to magic, the use of poorly understood herbs, bad and meddlesome surgery, and a complete lack of anatomic knowledge. The Renaissance, however, brought forth the beginnings of modern science as anatomy began to be understood and taught, as men became willing to risk punishment for scientific knowledge, and as the great Ambrose Paré learned to ligate blood vessels. Before him, bleeding wounds had been treated with boiling oil, but Paré found that the bleeding vessels could be identified and tied—the first

really great discovery of surgery. Praised for his work, he said humbly, "I dress their wounds, and God heals them." Perhaps we could use some of his humility today.

The seventeenth century saw the true birth of modern medicine and surgery when William Harvey demonstrated that the heart propels the blood and that the veins and arteries are always filled with moving blood. It seems incredible that in the thousands of years which preceded this discovery, men should have seen oceans of blood flowing in the brawls and battles which were of daily occurrence without recognizing this elementary truth. Without this knowledge, there would be no modern science of medicine and surgery.

True knowledge, as opposed to unsupported theories, began to accumulate—men began to make careful observations, to apply the experimental method. The microscope was invented, blood cells and capillary vessels were described, and medicine began, slowly enough, to divorce itself from magic and to become part of science. Surgery without any knowledge of anesthesia was a horror and consisted largely of amputations and "cutting for stone," that is, the removal of bladder stones. Pus was considered praiseworthy and was called laudable, and there was no knowledge of infection and of how to avoid it.

At the same time men were beginning to think better or, rather, they were beginning to experiment instead of to try to solve a problem by merely thinking about it. For example, Edward Jenner was told by a dairymaid that she could not contract smallpox (a disease extremely prevalent) because she had had cowpox, a mild disease transmitted to the hands of milkers. When Jenner found that this theory was generally believed in Gloucestershire, he investigated, and, having summoned up his courage, he inoculated a boy with cowpox. Eight weeks later he inoculated the boy with smallpox but no disease appeared, and a terrible scourge had been conquered. It seems apt to remark that it is amazing that there are people today who oppose vaccination although by it smallpox has been almost stamped out, and there is no reason why any person ever should have smallpox.

In the latter part of the nineteenth century, Pasteur demonstrated the existence of bacteria and their relation to certain diseases. He also discovered the nature of rabies and devised the Pasteur treatment which effectively prevents the victim of a rabid animal from developing this terrible and fatal disease. It is upon his work, as applied by Lister, that all modern surgery rests, although the extent to which it might have developed without anesthesia is in doubt. The first operation under anesthesia was performed in the Massachusetts General Hospital a little more than one hundred years ago.

With these great discoveries, progress became rapid. The cause of malaria was found and the problem of its control largely solved. Yellow fever was completely conquered; sleeping sickness was overcome; typhoid was banished; and diphtheria was overcome. Then came a discovery, the full significance of which is still not entirely realized; the discovery of the x-ray. In 1895 Wilhelm Conrad Roentgen discovered this remarkable agency, announcing it first in 1896. The whole practice of medicine has been changed by this discovery; diagnosis has become a science, and the treatment of disease has been revolutionized. Moreover, the roentgen ray is the key which unlocked the door to the vast and terrifying realm of nuclear physics, and even the atomic bomb owes its existence to Roentgen's great discovery.

There followed rapidly the discovery of radium, the vitamins, insulin. The number of lives saved and suffering avoided by the sulfonamides and penicillin is incalculable. Pneumonia, once a dread killer with a mortality of perhaps 40 per cent, has been robbed of its terrors. The hazards of surgery have been lessened steadily until surgical deaths are the exception and not the rule.

To recapitulate: The black death—bubonic plague—has disappeared from the civilized world because the bacteriology of it was comprehended. Smallpox has vanished. Typhoid fever is so rare that many a middle-aged doctor has never seen a case. No one need die of, or even have, diphtheria. Malaria is a controlled disease. Yellow fever has been vanquished. Tuberculosis is now easily recognized in its incipiency and arrested regularly. An increasing number of cancers are cured every year. Pneumonia is no longer the dreaded killer of a few years ago. Surgical risks have become minimal. Diabetes is well controlled. Scurvy and ricketts are becoming rarer and rarer.

Who has accomplished these miracles? With the single exception of yellow fever these imposing advances are the results of the efforts of doctors, ordinary doctors. Jenner and Koch and Harvey were general practitioners. Lister was a surgeon in private

practice. Pasteur, Roentgen, and the Curies were scientists unendowed and largely undirected.

Everything known in medicine and surgery, in physics, in chemistry, and in every science is published and freely available to any man whose educational background will permit him to comprehend it. Everything known to mankind about disease, its manifestations, and its treatment is embodied in modern medicine. It is little enough compared to the vast realm of the unknown, but what we know is available to all who seek it. There is no secret knowledge. When I think of the poorly prepared and incompetent people who are willing to take the responsibility for human lives, I think of Dr. Samuel Johnson, who once said to Mr. Boswell, "Sir, the trouble with people is not that they are ignorant, it's that they know so many things that aren't so!"

Today, medicine rests on a firm foundation of science, obeying the famous dictum of John Hunter, "Why think? Try the experiment!" We understand the structure of the human body, not only from the gross standpoint of organs, muscles, nerves, and so forth, but from the standpoint of its cell structure. We know its physiology; how it functions; what disease does to this function and this structure. We know its chemistry; what blood is; how it is made and renewed. We know the effect of diet and deficiency of diet; what the vitamins are; and how to replace blood with blood and with plasma. No one can tell how many young men are living and well today who would have died on the battlefield were it not that we knew how to use morphine and plasma against shock. Modern anesthesia and modern surgery are triumphs, and the operating room has lost its terror. We know how to explore the interior of bodies with roentgen ray, how to study the chemistry of blood and secretions. We can make atoms radioactive and so trace them through the body and study its behavior. We know how to use the microscope. We understand bacterial infection and how to cope with it. Life expectancy increases every year and the span of life grows steadily longer.

Doctors of medicine represent perhaps the only group of people in the world striving earnestly to make themselves unnecessary. Every doctor rejoices at every disease that is conquered although it removes one more source of occupation for him. The profession of medicine is sincerely and genuinely interested in the health of everyone, in the obliteration of disease and the elimination of suffering from the world. To achieve that shining goal, it needs the help of laymen.

See your doctor when you are ill, and see him early. Find a good doctor, attach yourself to him, and cling to him firmly. Resist ill advised attempts to abolish vaccination. Refuse to be moved by hysterical attacks on animal experimentation. Remember that only 5 per cent of all animal experiments involve any surgery, and that more than 500,000 dogs are put to death annually by the humane department of the City of New York. Demand that every person who presumes to treat the sick be well grounded in at least the elementary sciences. Support your hospitals and your medical schools. Remember that the miracles that have been accomplished were accomplished by ordinary good physicians—free men working in a system of free enterprise—and resist bureaucratic attempts to make medical care a part of the function of government.

With the help of interested laymen and with the guidance of physician leaders, the profession will go on to greater achievements. The life and health of each person will become steadily safer, and everyone will live longer, better, and more happily because of the progress of medicine. Let it be remembered that it was written in the scriptures: "Honor the physician for the need that thou hast of him, for the Lord thy God did make him."

INSECTICIDE CURES SCABIES

Gammexane, an insecticide discovered in England during World War II, is highly effective against scabies, say two New York physicians. Writing in the October 23 issue of *The Journal of the American Medical Association*, A. Benson Cannon and Marvin E. McRae of the Department of Dermatology, College of Physicians and Surgeons, Columbia University, and the Vanderbilt Clinic, report that in a test of gammexane on 100 patients with scabies, all were cured by one to three treatments with a preparation of the drug in vanishing cream.

In nearly two-thirds of the group, the disease "showed no signs of activity" after a single application of the cream. Gammexane was effective in cases of scabies which had resisted other treatment. The cream is virtually nontoxic and nonirritating to patients and has a faint, not unpleasant, odor, the physicians point out.

Gammexane has been extensively tested by the Department of Agriculture, the Army Service Forces, and the Kettering Institute, and is important in controlling chiggers, lice, ticks, fleas, cockroaches, bedbugs, and mites, according to the article.

Gammexane has been known as "666," a name which was undesirable because it had already been used for a commercial antimalarial preparation, the physicians say.

TUMOR SEMINAR II

Conducted by

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WASHINGTON, D. C.

Dr. B. F. Stout, San Antonio, chairman of the seminar, presented Col. Elbert DeCoursey, chief of Laboratory Service, Brooke General Hospital, who in turn introduced Col. J. E. Ash, Washington, D. C. Colonel Ash discussed briefly the anatomy and physiology of the skin and various dyskeratoses, presenting certain illustrative cases. He then introduced a new topic with the following cases:

EPITHELIOMA ADENOIDES CYSTICUM

CASE 5.—Presented by Lt. Col. R. H. Holmes, Brooke General Hospital, Fort Sam Houston.

History.—L. D. K., a white man aged 52, had a pearly, hemispherical lesion raised 1 cm. from the forehead, with overlying telangiectasis of two years' duration.

Diagnoses.—Epithelioma adenoides cysticum; cylindroma.

Colonel Ash: This is basal cell carcinoma, Brooke type. The term epithelioma adenoides cysticum is acceptable.

The slide shows a well-circumscribed expanding lesion with atrophy of the overlying epidermis and histologic telangiectasis. In addition to cysts there are a number of lanugo hair follicles with hair shafts indicating its nevus character. It is an example of both trichoepithelioma and epithelioma adenoides cysticum of dermatologic nomenclature, and is benign.

PILOSEBACEOUS NEVUS

CASE 6.—Presented by Dr. D. A. Todd, San Antonio. Patient of Dr. C. W. Tennison.

History.—The patient was a 22 year old woman. The oblong lesion had been present since birth and extended from in front of the ear over the cheek to the ala of the nose and the upper lip. It had a pinkish-tan color and the skin was thick and leathery. Near the upper portion, during the last three months, there appeared three small nodes which were deeply pigmented, ranging from 2 to 4 mm. in diameter. These small nodules caused the patient to consult her physician. The entire lesion was excised and sections submitted were from the nodular areas.

Diagnoses.—Basal cell carcinoma, pigmented; pilosebaceous nevus.

Colonel Ash: Using the clinical record and the clinical picture, I would much prefer to call this lesion a nevus. It is not the simple pigmented nevus or mole but I am using the term "nevus" in its broader connotation—a congenital dysontogenesis. The dermal elements are dominant. I think it is a pilosebaceous nevus with acanthosis and chronic inflammatory reaction. There are a few basal cells coming off the follicles that might suggest a basal cell tumor and these cells are all pigmented, but I think they are all secondary to the nevoid process. It cannot be called malignant at this point, and although it is impossible to tell what these lesions will do eventually, I would be surprised if it behaved badly.

Audience Member: Are you using the word nevus in the sense of the lesion having nevus cells?

Colonel Ash: No. I am using it in a broader sense—a congenital dystrophy of dermal elements, in this case, of the pilosebaceous apparatus.

BASAL CELL CARCINOMA

(Lantern slide.) This is a clinical picture of a basal cell carcinoma. Such tumors are practically always above the line of the mouth, and this one is on the nose of a woman.

(Lantern slide.) This is a basal cell carcinoma on the upper lip of a soldier. It is beginning to ulcerate. The Institute of Pathology has a number of basal cell tumors from young soldiers in addition to the large collection of leukoplakias and squamous cell carcinomas.

The various basal cell tumors make a complex group. Here again there is the confusion of the clinical and the pathologic terminology and interpretation. Another complication is that the basal cell comes not only from the basal layer of the epidermis, but also from the hair follicle epithelium. Tumors of the basal cell type, therefore, may arise either from the surface epithelium or from the hair follicle. The latter may be a nevoid structure with an embryonal or dysontogenetic character. Tumors arising from such elements are usually the congenital benign, multiple, epithelioma adenoides cysticum.

In the consideration of controversial subjects such as the basal cell tumors and the nevi, with complicated classifications over which there is wide differences of opinion, it has been my custom to devise some simple framework to which facts may be added as they are formulated. In analyzing this group of tumors with its varied clinical and histologic pictures, I start by differentiating them into two broad classes: (1) The diffuse, infiltrating tumors which arise from the basal layer of the epidermis either as solitary tumors or frequently from multiple foci, and result in the clinical rodent ulcer. This is the Krompecher type and is the true basal cell carcinoma (fig. 5). (2) The more complicated tumors which arise from hair follicle basal cells, the Brooke type (fig. 6). Although I am not convinced that Brooke meant to include all the varieties from this origin, I use it as a pedagogic expedient.

The fallacy in calling all Brooke-type basal cell tumors "carcinoma, basal cell" is that some of them certainly are not malig-

The preparation of this material was financed in part by a grant to the American Registry of pathology by the American Cancer Society.

EDITOR'S NOTE: The tumor seminar conducted by Colonel Ash in San Antonio on October 4, 1947, was the fourth such annual conference sponsored by San Antonio and Brooke General Hospital pathologists, who with Colonel Ash supplied most of the material for study. Pathologists from throughout Texas attended the seminar and were furnished a history and slides for the cases under consideration. Colonel Ash commented on each tumor and discussed additional pertinent material.

The report of the seminar is being published in two parts, the first part appearing in the November issue of the JOURNAL. The material will be available in its entirety in reprint form.

nant; but it is not always possible to tell, histologically, the benign from the malignant. It is possible, however, to pick out from the Brooke group one benign tumor that is well recognized by the dermatologist—the multiple, benign, congenital lesion mentioned above, epithelioma adenoides cysticum. It is usually small, is common around the eyelids but may be on other parts of the body, and is quite benign. Its histologic appearance is typical. Other tumors that arise from hair follicle epithelium, mature or embryonal, with the same histologic pattern may invade and be clinically malignant. Therefore the term epithilioma adenoides cysticum is reserved for the specific clinical entity, although it is not specific histologically. I do not like too well the term trichoepithelioma, in spite of the fact that histogenetically it is perfectly proper. It is at best a generic term and does not indicate the important differences in the types.

Incidentally, I have several pet aversions and one of them is to the term "epithelioma," which the dermatologist uses liberally. To me, it means only one thing, and that is a tumor of the skin. There are only two lesions to which I consider the name applicable: one is epithelioma adenoides cysticum, which is the specific entity that everybody recognizes, and the other is calcifying epithelioma, which will be considered later. The British go even further than American dermatologists. They call practically everything on the skin epithelioma, even nevi, and generically, as I have indicated, they are correct. It seems to me, however, that there would be less confusion of tongues if pathologists and dermatologists would say carcinoma, squamous cell; carcinoma, basal cell; carcinoma, transitional cell.

Krompecher Type.—(Lantern slide.) This basal cell tumor involves the inner canthus of the eye. This is a troublesome site and not uncommon. I pause to warn of the more common papilloma of the canthus that is confusing to the general pathologist. It resembles basal cell carcinoma, but is benign. In the region of the inner canthus, along the edge of the eyelid, senile keratosis with secondary carcinoma is frequently found. This is an instance of a frank basal cell cancer, the rodent ulcer or Krompecher type.

(Micro slide.) This is another example of the Krompecher, rodent ulcer type, in this instance of multicentric origin. Extending down from the basal layer of the epidermis are broad masses of basal cells still connected with the surface epithelium. In this central older area, the cells have gone deeper and deeper into the corium, almost down to the hair follicle level. Already there is destruction of the overlying epidermis with secondary infection and crusting. This is true basal cell carcinoma. The patient was a 24 year old white man who had had the lesion on his lip for three years (fig. 5).

(Micro slide.) This specimen is from a white man, 47 years old, who had a purplish macular papule of the temple. This is another example of the more diffuse but early multicentric basal cell, Krompecher type. The multicentric origin is not an uncommon feature.

Brooke Type.—(Micro slide.) The next section is from a lesion of six years' duration in the left temporal region of a white man, 26 years old. It had been treated with radium. This lesion is confusing. It certainly is not the Krompecher type, although it is multicentric in origin, and certainly it is not the benign epithelioma adenoides cysticum, but has definitely the configuration of the Brooke type (fig. 6). There is evidence of irritation on the skin surface as a result either of inadequate irradiation or of the diffuse and superficial growth of the tumor. Under higher power it is obviously basal cell. It must be determined whether these are real cystic spaces arising from some glandular element of the tumor or whether they are the pseudocystic spaces characteristic of adenoides cysticum. The evolution of the cysts is shown fairly well in this slide. The infiltrating strands of tumor cells isolate portions of the dermal stroma which becomes more and more degenerated until finally all the reticulate element disappears, leaving a space filled with liquefied material. This is the Brooke type of pseudocyst. In other tumors these cysts are really lined by glandular epithelium and indicate an origin other than the basal cells of the hair follicle. From this field it is not possible to say whether the tumor is epithelioma adenoides cysticum or an actual basal cell carcinoma with malignant potentialities. It has the Brooke type of architecture, but it is necessary that the clinical picture be known and that more of the tumor be studied histologically before a differentiation between the benign and the clinically malignant can be made.

(Micro slide.) This section is from a white woman, 76 years of age, who had had a multicystic lesion on her face for from two to three years. It contained clear mucoid fluid, but bled easily. The clinical history indicates that this is not benign cystic tumor. Masses of basal epithelium are coming off not only from the basal layer of the epidermis, but there is also evidence of hair follicle

origin. In addition there is cystic change in the cell masses. This is the Brooke type of basal cell tumor, obviously not the benign cystic lesion, nor yet the more serious Krompecher type. Under the higher power, in addition to the cystic areas, can be seen small strands of basal cells running out in all directions, an indication of some degree of malignancy. In the benign cystic basal cell tumor a mass of cells this large is never seen without a cyst, yet the cysts in this tumor are being formed in exactly the same way as those in the benign tumor, by the isolation of little islands of stroma which subsequently degenerate. There is no evidence of gland epithelium. The diagnosis is carcinoma, basal cell, Brooke type. This separates it from the benign epithelioma adenoides cysticum and carries the connotation that it is not as malignant as the Krompecher type.

(Micro slide.) The next slide is from a 44 year old white woman who had a number of small lesions on her face that were diagnosed clinically as multiple, benign, cystic epithelioma. These are apparently congenital lesions. The cysts are a little more exaggerated than usual. Under higher power the characteristics of the cysts can be seen, but, in addition, little buds of basal cells are springing off from some of the larger cell masses. These are not present in the classic benign tumor and they must arouse suspicion as to possible malignancy. I want to call attention to the foci in which the cells are not all basal but show a tendency to differentiate to squamous cells. Small keratin cysts of variable size result. Eventually in some of the smaller cysts can be found keratin masses that can be recognized as hair shafts, either of mature or lanugo hair. This particular tumor is coming not only from the basal layer of the surface epithelium but also from hair follicle epithelium. This lesion can be called a trichoepithelioma if its histogenesis is to be indicated, but to me it is just another example of the Brooke type of basal cell tumor, not particularly, if at all, malignant. There is no doubt that it is nevoid, that is, of hamartomatous or dysontogenetic origin.

(Micro slide.) The next section was taken from the son of the woman whose case has just been presented. He had a mass on the scalp and also the typical benign congenital lesions on the face. He is one of seven members of the same family who, in three generations, have had similar skin lesions. The tumor on the scalp, which bears the clinical name turban tumor, is obviously a dysontogenetic process. It includes hair follicle in all stages of development, none of them particularly mature, most of them of the lanugo embryonal type, and from them spring little nests and prongs of basal epithelium. There are areas showing typical cysts of the real Brooke type, and others in which there are in addition the little keratin cysts and occasional recognizable hair shafts.

Some pathologists misinterpret the significance of this squamous differentiation in trichoepitheliomas and call them basosquamous carcinomas. This squamous epithelium is mature and not neoplastic. It is trying to produce hair shafts and is just a part of the embryonal dysontogenesis. We will see how a real basosquamous tumor looks later. There can be all sorts of combinations of pseudocystic elements and embryonal hair follicles. Tumors such as these seldom go on to frank clinical malignancy as do those of the Krompecher type.

(Micro slide.) The next is from a 50 year old white man who had a lesion in the lumbar region which he stated was of two weeks' duration. It was a sharply marginated, pigmented, papular lesion with three little satellite clumps around it. It was diagnosed clinically as malignant melanoma. Microscopically, the tumor is entirely within the epidermis. There is no evidence of nevus formation in the corium, and under higher power the tumor cells are plainly basal in type but appear to contain a little more pigment than is usual in basal cells. It is this disturbance in pigmentation that identifies this lesion. There is migration of the pigment to the corium in chromatophores and macrophages, accounting for the clinically characteristic color of the lesion. There should be no difficulty in differentiating these pigmented phagocytes from true nevus cells. The ability of the basal cell to form melanin as demonstrated in this lesion brings up at once the great question as to whether, because of this melanoblastic property, malignant melanomas are derived from them as well as from the true nevus cells. I will speak of that later. This tumor is the so-called intraepidermal pigmented type of basal cell carcinoma, less malignant than the nonpigmented, and it represents one of the senile changes in the skin closely allied to the lentigines.

Basosquamous Carcinoma.—(Micro slide.) The next slide is an example of a true basosquamous carcinoma in a 56 year old woman. The lesion was on her leg and had been present for several years. There is a possibility of arsenical dermatosis, as the patient apparently had been taking arsenicals for some time. The basosquamous tumor

is most common about the face, cheek, eyelids, canthus, nose, forehead, and scalp. I do not like to make the diagnosis unless the squamous element is a dominant feature and is definitely neoplastic in character. The dermatologists claim that about 15 per cent of the skin carcinomas are basosquamous. In this slide the epithelial elements have infiltrated the corium, and even at this power the definite squamous cell content can be seen. Under higher power there will be no difficulty in differentiating the squamous element in this tumor from the maturing, more specialized hair epithelium in the trichoepithelioma. Its definitely neoplastic character can be seen. There is no attempt at regular maturation or regular keratinization, but instead, bizarre mitotic figures and poor differentiation of the basal layer. In other fields are apparent elements that conform definitely to the basal type. The importance of differentiating the basosquamous from the basal cell carcinoma lies in the fact that the former may metastasize, and it is the squamous element in the tumor that will do so.

Dr. B. F. Stout, San Antonio, has a kodachrome slide of benign superficial epitheliomatosis to show. (Lantern slide.)

NEVUS EPITHELIOMATO-CYLINDROMATOSUS

CASE 7.—Presented by Colonel Ash.

History.—A 26 year old woman had several small, tender, subcutaneous nodules of two years' duration. There was appreciable telangiectasis in the overlying skin. Because of the prominent tenderness, it was diagnosed clinically as either glomus or leiomyoma.

Diagnosis.—Sweat gland adenoma.

Colonel Ash: Yes, that is good. Remember I said the nodules were subcutaneous and not intracutaneous. This is nevus epitheliomato-cylindromatosus. The tumor is too deeply situated to be an epithelioma adenoides cysticum; also the cyst spaces are glandular in origin. I interpret this as a more complicated dysontogenetic adenomatous nevoid tumor involving not only hair follicle elements but also the sweat gland elements, a hamartoma. All of these complicated features can be explained from the embryonal anlage. I do not think it is necessary to coin a large collection of names to cover every morphologic possibility, particularly for these skin appendage tumors. They are referred to as syringo-cystadenoma, cylindroma, and hydradenoma, and are histologically comparable to the so-called "turban tumor." In this instance it is sweat gland anlage that is involved, and any stage in the gland development may be represented. The final picture may be anything from an unorganized mass of cells of the basal type to the fairly well developed sweat gland. Dr. Hamilton Montgomery uses the term nevus in its broad connotation as a tumor arising from skin element anlage. If it can be recognized as coming from hair follicles, it is trichoepithelioma; if from sweat gland elements, hydradenoma. In this instance the term nevus is convenient because the picture is so complicated. These tumors are not difficult to understand if it is remembered that they arise from some skin element anlage and therefore may have a thousand different histologic pictures. They are rarely malignant. The specimen under discussion is a variant of the Brooke type basal cell tumor. The adjective "cylindromatous" indicates that it contains hyaline strands along which the basal type cells are palisaded. The cyst spaces here are glandular, differing from those in epithelioma adenoides cysticum, and indicate that the tumor originated from sweat gland anlage. There are all gradations between epithelioma adenoides cysticum and the more obvious syringoma.

DERMO-EPIDERMAL NEVUS

CASE 8.—Presented by Drs. J. M. Moore and S. W. Bohls, San Antonio.

History.—A man, aged 54 had had a mole on the right wrist for many years. Within the last few months it had grown larger. The specimen consists of a piece of skin measuring 4 by 3 cm. on which there is a dark brown mole 12 mm. in diameter, elevated about 3 mm. above the surrounding skin surface, and ulcerated near the center.

Diagnoses. — Malignant melanoma; junctional nevus.

Colonel Ash: This is obviously a nevus; the question is whether it is a malignant or potentially malignant form. Nevi that are verrucous are less apt to be malignant than the flat ones. This one has a verrucous configuration, but in the basal layer of the epidermis are cells that can be recognized as the clear cells of Masson. I would call this, therefore, a dermo-epidermal nevus which is considered at least potentially malignant. Histologically, this specimen appears benign; it is well defined and there is an ample margin of free tissue about it. It would be an accident if some of the nevus cells had already escaped through a lymphatic. The chronic irritation, indicated by the ulceration, always increases the concern as to the outcome of nevi irrespective of their histologic appearance.

MALIGNANT MELANOMA

CASE 9.—Presented by Capt. P. T. Flynn, Brooke General Hospital, Fort Sam Houston.

History.—G. S., a white man, aged 27, had stepped on a land mine in September, 1943. A wound on the lateral aspect of the plantar surface of the left foot continued to drain until the present time (August, 1947). The lesion began to increase in size in August, 1946. Examination revealed a discoid, fungating mass measuring 4 cm. in diameter, elevated 5 mm., and well demarcated from the surrounding skin. The specimen consists of a granulomatous mass of skin from the lateral aspect of the left foot.

Diagnosis.—Malignant melanoma.

Colonal Ash: This is a frankly malignant tumor. Moles on the feet are particularly serious, largely because of their exposure to irritation and trauma. There is widespread infiltration of the dermis with spindle and epithelioid types of nevus cells. In the nonulcerated portion of the epidermis can be seen the "clear cells" and even in the deep portion of the tumor are the little clusters of these cells that have, as the Germans say, dropped out (*abtropfung*) of the basal layer and settled into the deeper portions of the dermis. These little groups of clear cells establish with certainty that the lesion is a nevus.

CASE 10.—Presented by Capt. G. B. Stansell, Brooke General Hospital, Fort Sam Houston.

History.—A white man, aged 56, noted a small lump on the right shoulder three weeks before. The nodule, which was deeply embedded in muscle, increased in size, and there was slight pain in the surrounding area. A mole had been removed from the right shoulder four months previously.

Diagnosis.—Malignant melanoma.

Colonel Ash: The significant features histologically are the epithelioid character of the cells and the scarcity of pigment. Such tumors may be confused with squamous cell carcinoma, and they are

the ones that the dermatopathologist might call melano-epithelioma, or amelanotic melanoma. The epithelioid type of melanoma is ordinarily more malignant than the spindle cell tumor, and it is in this type that extremely pleomorphic and bizarre cells occur. This particular tumor is a recurrence following the removal of a pigmented mole. The slide shows no surface epithelium; the tissues are heavily infiltrated by pure epithelioid cells containing practically no pigment; the characteristic small alveolar masses are persistent. The lymph node contains pigment that is not necessarily melanin.

BLUE NEVUS

CASE 11.—Presented by Lt. Col. G. J. Matt, Brooke General Hospital, Fort Sam Houston.

History.—A white woman, aged 23, stated that a "black mole" had been present on her right buttock for several years and had become painful in the last two weeks. Examination revealed a rounded, flat, brown-black lesion 0.5 cm. in diameter. In the specimen of excised skin, the lesion appears to be circumscribed.

Diagnoses.—Mongol spot; blue nevus.

Colonel Ash: Mongol spot is a rare lesion and really occurs in Mongols. It is just a collection of nevus cells or melanoblasts in the deep corium causing the clinically bluish areas. However, this specimen is obviously of neural origin. There are small groups of the cells palisaded and laminated to form the so-called "lames foliaces" which the French interpret as undeveloped Meissner's corpuscles. This is a blue nevus.

There are several small groups of nevus cells in the upper corium, but the bulk are in the deep corium and only fairly well circumscribed. Most of the cells are spindle shaped and groups of them are heavily pigmented. There is palisading of the nuclei and an occasional lames foliaces, both features indicating the neural origin of the lesion.

CASE 12.—Presented by Colonel Ash.

History.—An adult white man had had a nodule on the surface of the skin of the wrist for five or six years. It had not increased significantly in size.

Diagnoses.—Neural nevus; blue nevus.

Colonel Ash: The nodule is located deep in the corium almost at the sweat gland level, with the upper dermis free. It is sparsely cellular but there are a few little groups of pigmented cells of nevus type. Suggestions of neural origin will be noted in the little, thin, wavy nuclei of the fibrillar elements in some areas and in the palisading of nuclei. However, no frank nerve element is recognizable. This is a blue nevus.

MELANOMA

I have already spoken of the general connotation that has built up around the term "nevus." In this sense it includes any of the tumors of the skin arising from embryonal rests, by dysontogenesis, from embryonal anlage, as hamartomas, or however else the idea may be expressed. To be more specific, I prefer "melanoma" for the tumors that arise from melanoblastic cells. This term, of course, avoids the issue of histogenesis of the melanoblast, but it is more generally applicable to melanin-producing tumors than is the term nevus, which is not used in speaking of such tumors of the eye, meninges, and intestinal tract. The use of melanoma also makes unnecessary the large number of names that are used to indicate special forms of the tumor—melanocarcinoma, melanosarcoma, amelanotic melanoma, and so forth. It is necessary only to modify the term by "benign" or "malignant" to cover the entire gamut. In addition, the pathologist is not committing himself as to whether the tumor is of ectodermal or mesodermal origin! The term "nevus" is so well fixed in dermatologic parlance, however, that it cannot be readily eliminated. I accept it, if it is modified to indicate a specific lesion, much as I tolerate the term epithelioma in several instances. Blue nevus, dermo-epidermal nevus, neural nevus are specific and legitimate terms.

There is considerable controversy over the origin of the nevus cell. I accept with some reservation the theory of Masson that the melanoblastic cell is primarily neuroectoderm and, therefore, that it may occur normally or abnormally along nerve tracts. These cells are more common in the skin because its complicated specialized nerve endings provide greater opportunities for dysontogenesis. In addition to these neural elements, the basal cell of the epidermis may in itself have melanoblastic properties, as has already been mentioned in connection with the pigmented basal cell tumor and in seborrheic keratosis. Therefore it is necessary to recognize the possibility that the melanoma may arise from the basal cell. Montgomery, of the Mayo Clinic, is convinced of this, and his influence in dermatologic circles is such that dermatologists are certain to hear his opinion cited by their clinical colleagues.

We will avoid further argument on this point and as a pedagogic simplification will use the arrangement of the neural elements of the different types of dermal nevi. These highly specialized structures are of three types and locations: the onion-like corpuscle lying either deeply in the corium or in the subepithelial tissue, the pacinian corpuscle; the more highly organized Meissner corpuscle up in the papillary layer of the dermis; and finally the nerve fibers that enter the epidermis and branch about through the epithelial cells and terminate in little tactile cells. I am not going into the controversy on the histogenesis of the Langerhans pigmented dendritic cell in the epidermis, as to whether it is epithelial or neural. It is enough to know that among the epithelial cells there are dendritic cells which contain melanin. Whether or not they produce it is not clear, nor is it established that it is of neural origin, or epithelial, as Montgomery believes. At any rate, there are in the epidermis, in addition to the basal cells which may produce melanin, these highly specialized elements.

Consequently, there are neurogenically three possible foci of nevus development—the pacinian corpuscle for the blue nevus and neuronevus, the Meissner corpuscle for the common intradermal nevus, and the controversial elements in the epithelium for the intraepidermal and dermo-epidermal nevi. I have learned through long clinical experience that nevi arising from the more highly specialized elements in the dermis and subdermis are rarely malignant, but that the tumors arising in the epidermis are at least potentially malignant.

(Lantern slide.) I show this clinical picture as a good-natured "dig" at the dermatologist. It depicts a number of small individual tumors that occur in a line on only one side of the neck. The dermatologist submitted the diagnosis of "nevus linearis striatus verrucosis pigmentosis unius lateris!"

The melanomas about the eye are a rather common source of surgical material. We perhaps see more of them at the Institute than the general pathologist does because of our Registry of Ophthalmic Pathology. They not uncommonly occur on the edge of the eyelid.

Conjunctival Nevus.—(Micro slide.) This is the common benign nevus of the conjunctiva. I am much interested in the melanomas of the conjunctiva, especially of this type. They are deceiving histologically, and several have been sent to the Institute with the diagnosis of malignant melanoma. The ophthalmologist is naturally concerned by such a diagnosis and may resort to enucleation. As a matter of fact, there are several eyes in the Registry that were removed on the basis of the misinterpretation of the histology of this lesion. Experience with a large group of conjunctival melanomas has led me to adopt a conservative attitude toward their treatment. Even the histologically malignant melanomas are usually amenable to simple excision. If there should be local recurrence, if the cornea is involved, or if the tumor extends up through the fornix onto the palpebral conjunctiva, enucleation or exenteration are still available and the results are remarkably good. I reviewed our cases a short while ago and found that of the 40-odd malignant melanomas of the conjunctiva treated in various ways, the majority by primary simple excision, only 4 had metastasized. The group included several that had extended to the palpebral conjunctiva and to the intraorbital tissues.

(Micro slide.) The next slide is from a conjunctival nevus. The conjunctival epithelium is almost replaced by the nevus cells that are infiltrating it, and the other features are sharply defined in the lower levels. There are glandular inclusions and a hair follicle or two. It is benign.

(Micro slide.) This is another benign nevus, which has extended onto the cornea. Obviously this type is a little more difficult to eradicate, although it is surprising what the skillful ophthalmologist can do with these lesions at the limbus even when they involve the cornea. This slide illustrates the histology of the run-of-the-mill nevus of the conjunctiva. As stated before, it is not at all unusual for the Institute to receive such a specimen as this with the diagnosis of malignant melanoma or basal cell carcinoma. It is different cytologically from the ordinary skin nevus, although it does contain the small groups of clear nevus cells. In addition, however, there are the spindly pigmented cells of a more active tumor. The feature that fools the general pathologist who has not had much experience with eye material is the involvement of the overlying epithelium. As a matter of fact, these are really dermo-epidermal nevi, but apparently they behave differently in the conjunctiva than in the skin. It is rarely that this type of tumor undergoes malignant transition, and it is not subject to the irritations sustained by some skin nevi. Another feature characteristic of this lesion is inclusion of conjunctival epithelium which contains cuboidal goblet cells, and they produce little gland cysts lined by cuboidal epithelium. More rarely there may be hair follicles and sebaceous glands. I do not remember ever seeing sweat glands, but that is a possibility. The conjunctiva is a specialized ectoderm and as such may retain the anlage of epidermal elements. Dermoids without the melanoma content are relatively common on the conjunctiva.

Malignant Melanoma, Conjunctival.—(Micro slide.) This section is obviously not from a benign, but from a malignant melanoma that has infiltrated a wide area of conjunctival stroma and is involving the cornea. Such an eye should be enucleated, and if the tumor has extended to the palpebral conjunctiva, exenteration of the orbit is called for. The cellular composition of these malignant melanomas of the conjunctiva is different from that of the ordinary malignant melanoma of the skin. They are replicas of the melanomas of the uveal tract, in this instance predominantly spindle cell.

Malignant Melanoma, Intraocular.—(Lantern slide.) The Army Institute of Pathology has more than 2,300 intraocular malignant melanomas in the Eye Registry and considerable work has been done on them, not by me particularly, but originally by Gen.

George R. Callender, who was at the Institute when the Eye Registry was founded in 1922, and more recently by Mrs. Helenor C. Wilder, our current and most proficient ophthalmic pathologist. I always like to cite this experience as an example of what can be accomplished by the concentration of a large amount of material in a given category where it can be studied uniformly. Patients are followed through the years so that eventually there are a large number of life histories of the condition on which to base definitive studies. General Callender, for example, was able to show as a result of such follow-ups that prognosis depends to a predictable degree on the cell type of the melanoma.

The intraocular melanoma may involve any portion of the uveal tract—choroid, ciliary body, iris—but as seen in this plate from our *Atlas of Ophthalmic Pathology*,[1] the distribution is predominantly in the posterior hemisphere of the globe. It varies considerably in gross form.

(Lantern slide.) It may be flat and not be obvious clinically until it has extended for a considerable distance along the choroid. The common type is a more nodular mass, elevating Bruch's membrane, which protects the retina just as Bowman's membrane protects the cornea. Sometimes the tumor breaks through Bruch's membrane, producing the so-called collar button or mushroom tumor, which is then free to infiltrate the retina and vitreous.

(Lantern slide.) On the other hand the tumor in this eye has gone the other way, along the posterior cilliary vessels and nerves, and has extended through the sclera. Occasionally the tumor breaks directly through the sclera and invades the orbital tissues. The English tried to attach prognostic meaning to gross morphologic features, but without significant results. The tumors that appear to be confined to the choroid are just as likely to have already metastasized at the time of enucleation as more wildly growing ones. The uncertainty of prognosis is the discouraging feature of surgical treatment of intraocular melanomas. Orbital extension is comparatively rare, but general metastasis may become evident at any time from a few months to many years after enucleation. Freedom from tumor for five years is not the hopeful criterion of cure that it is with some other types of tumors.

(Lantern slide.) Just a glance at Callender's cellular differentiation: There are two types of cells, spindle and epithelioid, just as in the skin melanomas. General Callender further distinguished two types of spindle cells, the "A," with a relatively small amount of cytoplasm and a spindle shaped nucleus across the long axis of which runs a fold of chromatin; and the "B," a larger, plumper, obviously more active, succulent cell having a well-defined nucleolus in a more vesicular nucleus.

Tumors of type "A" cells are least likely to metastasize; those of type "B" more so; and those containing epithelioid cells most likely to do so. The epithelioid cell may constitute the entire tumor or be associated with the spindle cell (usually type "B") in varying proportions. At times the cells have a fascicular arrangement, the silk-ribbon effect, which is not seen in melanomas of the skin. The palisading may be to the extent of imitating adenocarcinoma. The degree of malignancy in the mixed cell tumors is dependent on the epithelioid cell content.

(Lantern slide.) This is just an oddity. It is a metastatic nodule in the choroid from a skin melanoma.

Not all of the pigmented tumors in the eye are malignant.

(Lantern slide.) This is the so-called melanosis of the choroid, appearing clinically as the café-au-lait patch through the ophthalmoscope. Another example is the so-called freckle of the iris. For these, as well as for conjunctival tumor, I preach conservatism in treatment. Such tumors are located where they can be observed and they need not be touched unless they show active growth, when simple iridectomy is usually sufficient, unless the lesion is at the base of the iris. If it invades the ciliary body, enucleation is necessary.

SKIN MELANOMAS

Intradermal Nevus.—(Micro slide.) Reverting to the skin melanomas, this slide emphasizes the general characteristics of the simple intradermal nevus. This example is not as verrucous as some of them, but it is obviously well elevated above the skin surface. The epidermis is atrophic because of the expansion of the tumor underneath, but for the most part there is a clear zone between the tumor-cell clusters and the overlying epidermis. Under higher power the cell clusters are seen to approach the basal layer, which contains an occasional clear cell.

Verrucous Dermal Nevus.—(Micro slide.) The next section is from a verrucous dermal nevus. It is from the scalp of a 30 year old man who had been aware of it since childhood. Verrucous nevi of the scalp are subject to considerable irritation, although less than those on the feet. This specimen is bluntly papillomatous and there is again the clear zone between the tumor and the surface epithelium. The overlying epidermis is

atrophic, but in the hair follicles there is definite hyperkeratosis. In the hairy nevi of other parts the hairs that are part of the nevus can be identified because they are usually either greatly hypertrophied or they are of the embryonal lanugo type. There are groups of cells that suggest abortive Meissner corpuscles. This tumor is perfectly benign.

Hairy Dermal Nevus.—(Micro slide.) The next slide is from a large pedunculated nevus on the back of the arm of a 25 year old woman. Its hairy nature is obvious. The follicles are bunched and much too numerous, especially for a lady's arm. Again the clear zone is present between the epidermis and tumor. Closely packed collections of nevus cells appear all through the dermis. This is the hairy dermal nevus—the hamartomatous process, including not only the neuroepithelial element but also the hair follicle element of the skin.

Dermo-Epidermal Nevus.—(Micro slide.) The next specimen I show because in addition to the features of the intradermal nevus, which it is predominantly, there are also the "clear cells" in the basal layer of the epidermis. This is a rather papillary tumor with deep keratinized follicles. It is a dermo-epidermal nevus, and as such is potentially malignant. If this section is representative of the specimen, exision is not adequate because the tumor cells reach to the line of incision.

(Micro slide.) This next section is taken from a light brown lesion on the cheek of a 15 year old girl. It is of a papillary nature and there are occasional cysts. The presence of a few pigmented clear cells in the epidermis is not a cause for alarm. With this papillary character and the predominance of the intradermal features, there is certainly no evidence of present malignancy. Pigmented nevi in children are rarely malignant despite their histologic appearance.

(Micro slide.) The next specimen is a little more obvious. It is from a 21 year old girl who had had the lesion on her arm since birth, but recently it had increased in size. Under low power can be seen the definite difference between this lesion and the others that were more purely intradermal. The tumor is confined to the upper papillary layer of dermis and to the epidermis, where there are not only single clear cells but groups of them in the tips of the hypertrophied rete pegs. This is a true dermo-epidermal nevus and it is potentially malignant. It is not possible to tell from the histologic features alone, however, whether it has already metastasized. There is an adequate margin of clear tissue all around it, and only by chance would some of the melanoma cells already have escaped through a vessel. This is the type of lesion that might well become clinically malignant, particularly if subjected to chronic irritation (fig. 7).

(Micro slide.) The next slide is from a flat pigmented lesion on the lip of a girl who also had hairy nevi on other parts of her body. Under the higher power can be seen a concentration of clear cells in the basal layer similar to that in the previous case. Some cells of the same type are deep in the dermis. This is a potentially malignant dermo-epidermal nevus.

Blue Nevus.—(Micro slide.) The next slide is from a pea-sized, firm, raised, dark blue papule of unknown duration on the chest of a woman 53 years of age. It extends a little farther up in the dermis than the ordinary blue nevus, but the bulk of the cells are rather deep in the dermis, and blue nevus it is. Here are interlacing spindle cells showing considerable pleomorphism and pigmentation. There are in addition groups of cells suggesting the lames foliacés or abortive pacinian corpuscles.

(Micro slide.) This next slide is from a 38 year old white man who had one lesion 20 by 10 cm. on his leg. It was café-au-lait color, mottled with black. The dermatologist regarded it as a "nevus pigmentosus et pilaris," or hairy nevus. Again the bulk of the tumor is deep in the dermis. There is a rather broad clear area between tumor and epidermis, and none of the papillation of the purely intradermal tumor. There is atrophy of the epidermis because of expansion of the tumor. It is exceptionally large and not a usual type of blue nevus, but cytologically that is the diagnosis.

GRANULOMA PYOGENICUM

CASE 13.—Presented by Capt. John T. Ellis, Brooke General Hospital, Fort Sam Houston.

History.—A small, raised, red pedunculated tumor had been present on the right thigh of a white, 19 year old boy for five weeks. It bled easily upon slightest trauma.

Diagnoses.—Granuloma telangiectatica; hemangioma; granuloma pyogenicum.

Colonel Ash: With the help of the clinical history the pathologist can make a more specific diagnosis than just hemangioma. The lesion is granuloma pyogenicum, which histologically is undifferentiable from any of the focal, more or less acute, vascular tumors—vascular nevus, pregnancy tumor, and papillary hemangioma. One form of hemangioma which is of more clinical importance to the otolaryngologist than to the dermatologist is the superficial, well-circumscribed lesion that is fairly common on the nasal septum just inside the nares, and is very troublesome clinically.

Granuloma pyogenicum is more common in the young age group. It is a small, well-circumscribed, elevated papule that bleeds easily, has an ulcerated surface, and is refractory to ordinary treatment. It

responds readily to radium or roentgen ray. Histologically, it is richly vascular, the blood vessels diminishing in size toward the surface, and the stroma is infiltrated with purulent exudate.

GLOMUS TUMOR

CASE 14.—Presented by Col. Elbert DeCoursey, Brooke General Hospital, Fort Sam Houston.

History.—A lump about the size of a pigeon's egg developed rapidly under the right mandible and another in the right axilla of a white man, aged 33, about one month before biopsy. The masses were moderately tender. White blood cells numbered 16,000, of which 82 per cent were polymorphonuclear neutrophils; both red and white cells were normal in appearance. Roentgenograms of the affected region were negative. The specimen is from a biopsy of the right axilla.

Diagnoses.—Hemangiopericytoma; sclerosing hemangioma.

Colonel Ash: I am a little skeptical about the clinical record on this case, because it is a well-circumscribed lesion. What was the tumor under the jaw?

Capt. J. T. Ellis, Brooke General Hospital, Fort Sam Houston: I do not know. The clinician called it a lump.

Colonel Ash: Whether or not the clinical history is accurate, the lesion is a simple glomus tumor.

The skin in this specimen is not like that of the axilla, but the lesion is typically a small glomus. There are large vascular spaces, and among the perithelial cells can be seen a number of fibrils suggesting those associated with the myoepithelioid cells of the glomus.

KAPOSI SARCOMA

CASE 15.—Presented by Dr. B. F. Stout, San Antonio. Patient of Drs. C. F. Lehmann and J. L. Pipkin.

History.—A Latin-American man, aged 55, a tailor, was first seen on August 6, 1946, at which time there were numerous pea to coin-sized, nodular, indurated, solid lesions scattered on the buttocks, thighs, arms, legs, and feet. These were smooth-surfaced, raised, bluish-red nodules.

Diagnoses.—Kaposi sarcoma; capillary hemangioma.

Colonel Ash: Kaposi sarcoma is my choice.

VASCULAR TUMORS

It is with considerable temerity that I attempt to discuss the vascular tumors with this group after Dr. Purdy Stout's seminar of last year.[3] He has definite and acceptable notions of the complicated variations of these tumors, but I will show you some of them and give my views.

Granuloma Pyogenicum.—(Micro slide.) There is considerable discussion as to whether or not granuloma pyogenicum is really a definite entity. It is encountered in young persons, is a localized lesion, and usually develops at the site of trauma. It is not amenable to ordinary treatment and is prone to ulceration and hemorrhage. Judged by histologic features alone it could be just another papillary hemangioma, but it has clinical characteristics of its own. This one sprang up rather suddenly for this type of lesion. It shows the pyogenic feature perhaps more clearly than does the lesion in case 13. The tumor is expansive (above the skin surface) rather than infiltrative, and the pyogenic feature follows when the surface is broken and there is secondary infection.

Pregnancy Tumor.—(Micro slide.) This is an interesting clinical entity, but again, not too distinctive histologically—the pregnancy tumor or gingivitis gravidarum. It occurs in a small percentage of women in the first two or three months of pregnancy. It is usually a diffuse gingival involvement, but at times may be a focal epulis-like tumor. It is an uncomfortable complication. The gums swell, sometimes to great proportions, bleed easily, and are tender. Histologically, it is identical with the other "acute" hemangiomas and without the history it would be impossible to differentiate it from them. Apparently it is on a hormonal basis and clears up readily after the termination of pregnancy. Under higher power it can be seen that the lesion is an actively growing vascular tumor; the larger vessels are down in the base and there is capillary expansion out into the periphery. As long as the surface remains intact there is not much inflammatory reaction, but the lesion is likely to ulcerate, as in this case where there are features of active secondary inflammation. Sometimes, as in this instance, there is a tendency to acanthosis of the surface epithelium. This may be extensive and assume a pseudo-epitheliomatous character.

Infiltrating Hemangioma.—(Micro slide.) The next is from a tumor in the deeper tissues of the arm. It was rather widely infiltrating, and I introduce it as one of the more common vascular tumors with which pathologists have to struggle. Histologically it is simple, but clinically it is difficult. It is made up of mature blood vessels that have a definite tendency to invade. It is not malignant in the sense that it does not metastasize. It is troublesome because of its invasiveness, which also complicates attempts at surgical removal. An infiltrating hemangioma with no excess cells of any sort—endothelium, perithelium, or muscle—it is just a wild growth of mature blood vessels that infiltrates subcutaneous fat and muscle, as in this instance. This tumor, as are all vascular tumors, is sensitive to irradiation therapy.

Hemangio-Endothelioma.—(Micro slide.) The next slide shows a rather focalized tumor with superficial ulceration from the lip of a soldier. It is an example of a vascular tumor in which there is excess proliferation, in this instance, of the endothelium. In the deeper tumor can be seen, in addition to the vascular elements, a great overgrowth of endothelium. This is the benign hemangioendothelioma.

Pericytoma.—(Micro slide.) This next specimen may cause a little controversy. It is a large tumor of the stomach that invaded extensively. It is made up of vascular elements, but when the cellular content of this tumor is examined it appears different from the pure endothelial element seen in the last case. There is a definite space between the vessel lumen and the proliferating cells. The cells are a little more spindly in character than in the other tumor and they are all outside the muscular coat of the vessels. This is one of Dr. Purdy Stout's pericytomas. There was no metastasis but there was extensive infiltration and invasion. As far as I know the stomach is an unusual site for this particular type of tumor.

Angiomyosarcoma.—(Micro slide.) This next (fig. 8) is a tumor from the kidney, found incidentally at autopsy in a soldier who was killed in an accident. It was definitely in the kidney and not in the perirenal pelvic fat. The tumor is made up of vascular elements surrounded by whorls of spindle cells obviously coming from the vessel walls. Under higher power they differ not only from the endothelium of the hemangioendothelioma but also from the cells of Dr. Stout's pericytoma. There is great hyperplasia of the muscularis of the tumor vessels, and like a pin wheel the muscle cells are being whorled around to form these masses. Some of them are infiltrating the fat for some distance from the blood vessels. This is angiomyosarcoma, or to include the fat, angiomyoliposarcoma. It is a peculiar tumor. The Institute has had 2 or 3 of them from the kidney. The first I remember was in a young man who was apparently perfectly well until he collapsed one day from an enormous intra-abdominal hemorrhage. At operation it was discovered that a tumor, apparently primary in the pelvic fat, had invaded the right kidney extensively. The surgeons did a nephrectomy, took out what extrarenal tumor they could, and then gave the patient intensive irradiation therapy. That was five or six years ago and he is still well. Such tumors cannot be considered malignant in the sense that they metastasize, but they have a peculiar propensity to eat into anything that happens to be in their way.

Kaposi Sarcoma.—Several years ago within a month 2 cases were submitted to the Institute with a peculiar, almost identical, clinical history. The prodrome was an influenza-like episode which lasted for several months. The patients were under critical clinical observation; no tests gave helpful information until finally it became evident the heart was involved by tumor. Both patients died and at autopsy tumor was found extensively involving the pericardium and heart muscle. There were no cutaneous lesions but there were internal metastases, to the liver particularly. (Micro slide.) The histologic picture is sarcoma—the indefinite vascular elements, the little vacuolated cells, and the spindly, obviously tumor cells. These are examples of the visceral type of Kaposi sarcoma without skin involvement.

(Micro slide.) I show this Berlin blue stain of skin from Kaposi sarcoma simply to demonstrate the distribution of the iron pigment. It is in the basal cells of the epidermis, also in the deeper portions of the tumor, and is a characteristic of the tumor.

NEUROFIBROMA

CASE 16.—Presented by Capt. P. T. Flynn, Brooke General Hospital, Fort Sam Houston.

History.—The lesion, from a white man, consisted of a nonpigmented, nipple-like skin projection, 8 mm. in diameter and raised 5 mm. from the chest wall.

Diagnosis.—Neurofibroma.

Colonel Ash: This is a rather cellular form of neurofibroma and the neural features are not particularly clear. The ordinary fibroma can be ruled out by the lack of fasciculation of the fibers. Palisading of the nuclei is not prominent in this particular slide, but the nuclei are quite slender and occasionally more wavy than those of the pure fibroma. The epidermis is atrophic.

DERMATOFIBROMA

CASE 17.—Presented by Lt. Col. R. H. Holmes, Brooke General Hospital, Fort Sam Houston.

History.—A smooth, circumscribed, nontender skin nodule, measuring 0.5 cm., had been present on the left ankle of a 37 year old white man for about eight years, and had increased in size during the past year and a half.

Diagnosis.—Dermatofibroma; sclerosing hemangioma; histiocytoma.

Colonel Ash: This is an example of the dermatofibroma. The Boston group of pathologists prefers the term sclerosing hemangioma, and some dermopathologists call it histiocytoma; either the histiocytoma of Woringer (the French school) or histiocytoma of Senear of the University of Illinois. I never have been enthusiastic about the term histiocytoma for this particular lesion because I have never seen one in the stage where it could really be called histiocytoma, although it is true that vacuolated histiocytes may be found in many of the dermatofibromas. I object less to the Boston group's interpretation of the lesion as sclerosing hemangioma. The point is that it has a definite histologic picture and is a distinct clinical entity. It may, however, have a bizarre deceiving cellular pattern—multinucleated cells, grotesque nuclei, and so on—but it is benign. Not infrequently these lesions have been sent to the Institute with the diagnosis of sarcoma. It is a tumor primarily of the younger age group. Usually located on the leg, it is fairly deep seated and may be associated with trauma.

The histologic features are a free subepithelial zone of dermis in which the blood vessels are usually prominent and dilated; a diffuse, not well circumscribed, cellular infiltration of the dermis by spindle, stellate, and multinuclear cells having a characteristic arrangement which suggests wind-blown

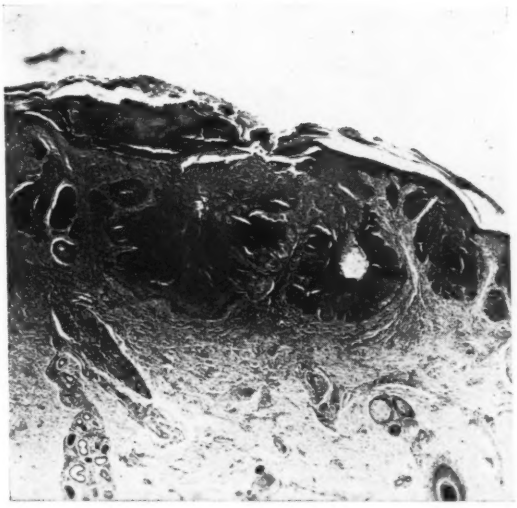

FIG. 5. Basal cell carcinoma, Krompecher type. Rodent ulcer with multicentric basal cell masses. X 11.6.

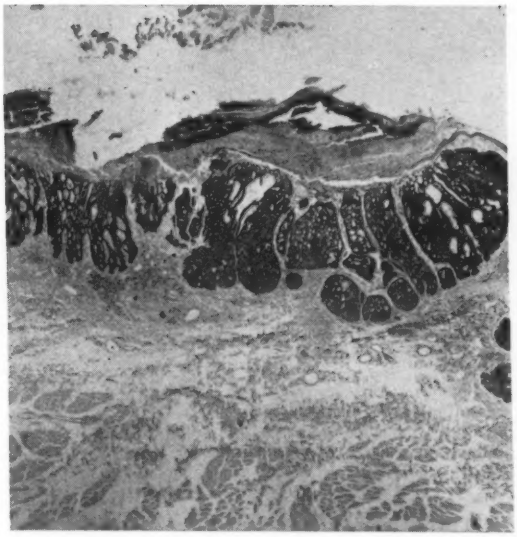

FIG. 6. Basal cell carcinoma, Brooke type. Basal cell masses with cystic degeneration of stroma. X 10.

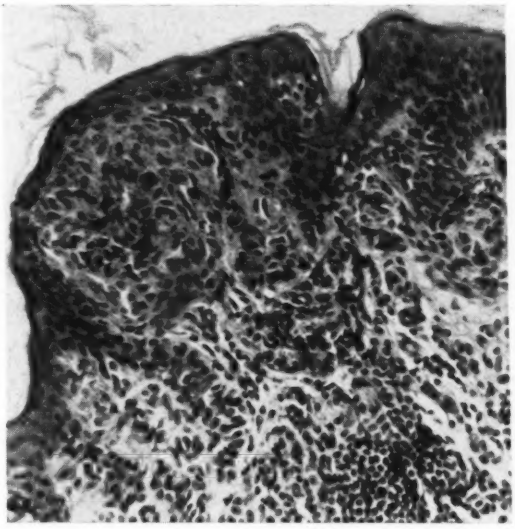

FIG. 7. Pigmented nevus, dermo-epidermal type. Nevus cells in epidermis and upper papillary layer of dermis. X 180.

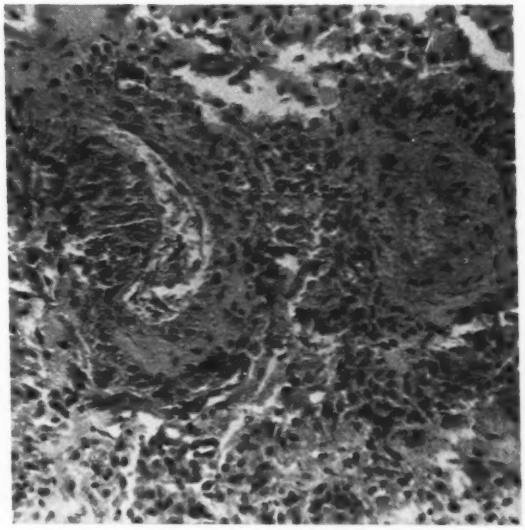

FIG. 8. Angiomyosarcoma of kidney. Vascular elements surrounded by spindle cells. Foci of embryonic fat. X 172.

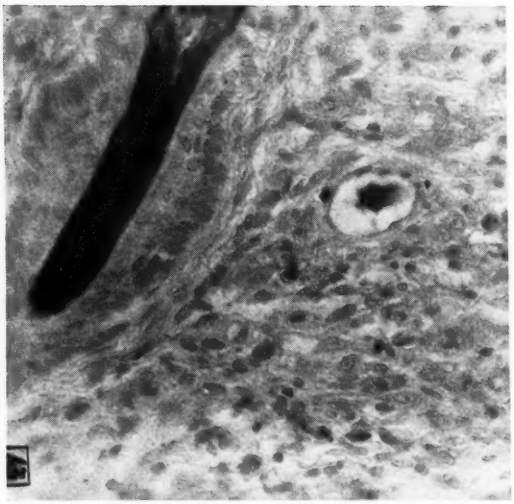

FIG. 9. Leprosy. Globi in large foam cells. X 387.

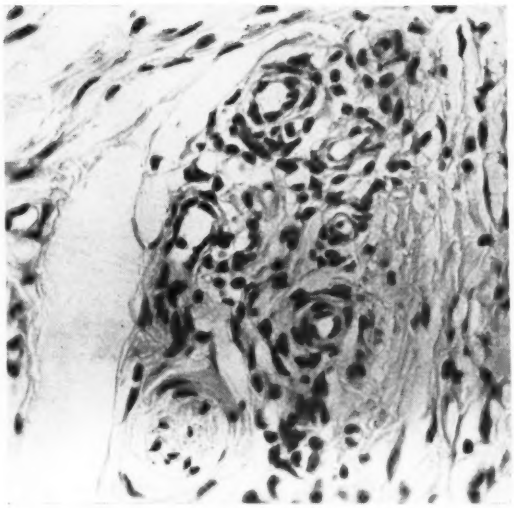

FIG. 10. Granuloma annulare. Perivascular changes are not specific. X 387.

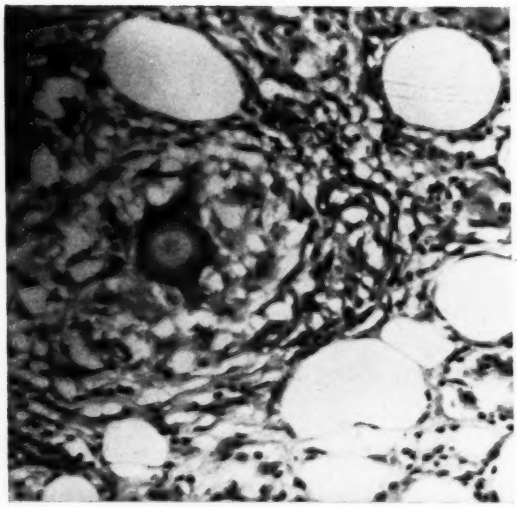

FIG. 11. Tuberculosis indurativa. Wucher replacement atrophy of fat. X 257.

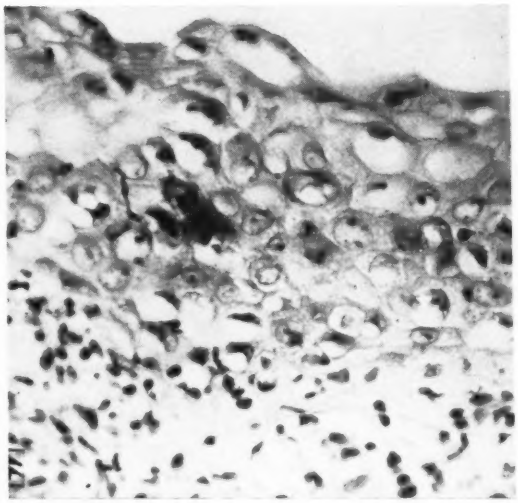

FIG. 12. Herpes zoster. Ballooning degeneration. X 387.

leaves; blood pigment; and possibly small groups of lipoid histiocytes.

CALCIFYING EPITHELIOMA

CASE 18.—Presented by Colonel Ash.

History.—A young white man had a tumor in the calf of his right leg, of which he had been aware for several weeks. It had recently become painful. The specimen was submitted with the diagnosis of squamous cell carcinoma.

Diagnosis.—Calcifying epithelioma.

Colonel Ash: This tumor has not infrequently been misinterpreted by the contributing pathologist as a basal cell carcinoma. As I mentioned previously, this is one of the two lesions which in my opinion may justifiably be called epithelioma. Some dermatologists insist that it comes from sebaceous glands. I have not been able to see evidence of that in all instances. I think it is just an example of epidermal inclusion in which the epithelium undergoes this peculiar change. The live cells are practically all basal; the rest of the lesion is keratin. If the capsule ruptures, there will be foreign body reaction, calcification, and even ossification. I consider it a benign lesion though there are reports of resultant squamous cell carcinoma.

NEUROGENIC FIBROMAS

(Micro slide.) This slide is from a tumor on the left arm of a 19 year old boy. It was said to have been present for one month. I show it as an excuse to tell how I interpret the neurogenic-fibrous tumors. There is a great controversy over the histogenesis of the fibromas of neural origin. On the one hand is the group which includes Dr. Purdy Stout and his colleagues, who are of the opinion that neurogenic fibromas come from neurilemal elements, the Schwann cells; on the other hand are those who insist that they arise from the supporting connective tissue or mesenchymal elements of the nerves. Colonel DeCoursey will remember our early experience at the Institute when we attempted to differentiate the two types, the neurofibroma from the neurilemoma. If we saw palisading to the point where we could recognize the so-called Verocay body, we assumed an origin from neurilema and we called the tumor a neurilemoma or schwannoma. If the tumor did not have the Verocay element but showed simple palisading of the nuclei, we assumed that it came from the mesenchymal supporting tissue and we called it a neurofibroma. The more we saw of these tumors, however, the more difficult it became to differentiate between ordinary palisading of the nuclei, the criterion of neural origin, and the more highly differentiated arrangement of the cells, and we began avoiding the issue by calling them all neurofibromas and dropping the other terms. This action was based largely on the appearance of two articles in the same number of the *American Journal of Pathology*, one by Dr. Purdy Stout and his colleagues[2] in which they claimed, on the basis of tissue cultures, convincing evidence of two histogenetically different tumors. The other article, also by a competent pathologist,[4] insisted that such a differentiation was not possible and that all the lesions were neurofibromas. So, in my lazy way, I have met the situation by calling them all neurofibromas. I do not know that there is any clinical significance in the differentiation, and until more convincing evidence than we have at present is available, I shall continue to call them neurofibromas. It was Verocay who felt that these peculiar elements were "formes frustres" of the Meissner corpuscle, and who therefore assumed that they must come from neural element and not from the supporting mesenchymal tissue.

Neurofibroma.—(Micro slide.) This next slide shows another historic feature that was emphasized by Antoni some time ago. There are two types of tissue, the solid fibrous, the so-called Antoni A, and the more edematous, obviously hydropic material, the Antoni B. There again I do not think there is any practical significance in such differentiation. It is simply that certain portions of the tumor have undergone myxoid degeneration and I do not know that it has special significance.

(Micro slide.) This neurofibroma is from a Negro man, 28 years old, who had had it for about eight years. The palisading is not as readily seen in this tumor. It is a rather deep-lying lesion and by higher power definite palisading may be seen with the formation of Verocay bodies. In addition to this palisading, on which pathologists are all dependent for the identification of neural origin, there are the individual cellular characteristics—the thin wavy nucleus and the fibrillar content which is finer than in the fibroma of connective tissue origin. In the simple fibroma there is apt to be more definite fasciculation.

Dermatofibroma. — (Micro slide.) This tumor from the ankle of a 48 year old man was of twelve years' duration and apparently followed a bruise. It is a dermatofibroma, the significant features of which have already been mentioned. In this instance the tumor is closer to the overlying epithelium than usual. There is little if any tendency to fasciculation of the cells. In this particular section there is one feature that is not usual: the multinucleated cells form parts of vessel walls, thus suggesting the vascular origin of the tumor.

(Micro slide.) The next is a dermatofibroma from the thigh of a 37 year old male, present for nine years. It was painful and the clinician thought it might be a glomus. It is not encapsulated. There is some blood

pigment, but the tumor is not as obviously vascular as the preceding one. There are bizarre and multinucleated cells and even a few mitotic figures, but it is a perfectly benign lesion.

Leiomyoma.—(Micro slide.) The next lesion will not give any diagnostic difficulty, but I want to call attention to it because of its clinical characteristics. It is a dermal leiomyoma from a woman aged 41. She had several lesions on the extensor surface of the wrist that had been present for twenty years. They are usually circumscribed as is seen here. Under higher power the cells can be recognized as those of smooth muscle. A Masson stain will help if the pathologist is skeptical. The tumors usually arise from the arrectores pilaris muscles and are usually multiple, occurring in little groups. The common clinical characteristic is periodic pain, with almost exquisite tenderness, suggesting glomus. The dermal leiomyoma is benign.

LEPROMA

CASE 19.—Presented by Col. Elbert DeCoursey, Brooke General Hospital, Fort Sam Houston.

History.—Three small discolored spots had appeared on the gluteal region of a white, 8 year old girl two months before biopsy. No data were available on the general condition.

Diagnosis.—Leproma.

Colonel Ash: This condition can be extremely deceiving in the early stages when the lepra cells are still restricted to the vascular elements and about the skin appendages. To add to the difficulty, Mycobacterium leprae in its recognizable form may be absent, when the lepra cells will not show their characteristic vacuolization. It may require long and painstaking observation before the diagnosis can be established. My advice is not to eliminate leprosy just because the acid-fast bacillus cannot be demonstrated. The pathologist should be suspicious when in a biopsy from an anesthetic area or one showing altered pigmentation he observes the mononuclear cells along the cutaneous blood vessels and especially about the sweat glands or invading the arrector pilaris muscles.

(Micro slide.) I want to show just one slide of leprosy to demonstrate the globi. The reaction is a little further advanced in this case than in the slide for case 19. The whole dermis now is filled with the foam cells, and there will be no difficulty in identifying the condition as nodular leprosy. Pathologists must be rather careful in making a diagnosis, because with low magnification cutaneous leishmaniasis looks much like nodular leprosy, particularly if the lepra cells are not foamy. The globi in the lepra cells are formed by the agglutination and apparent fusion of numbers of the bacilli. As is usual in nodular leprosy the overlying epidermis is intact but atrophic. The whole dermis, including the papillary layer, is practically replaced by the lepra cells (fig. 9).

VENEREAL GRANULOMAS

Instead of giving a dissertation on leprosy and yaws, I want to substitute a discussion of venereal granulomas which practicing pathologists are more likely to see, particularly the penile lesions of syphilis, granuloma inguinale, lymphopathia venereum, and chancroid. While the histology of these conditions is not pathognomonic, I have developed a few criteria that are at least suggestive in the differentiation when the etiology cannot be definitely demonstrated.

Chancre.—(Micro slide.) First the chancre, with which all pathologists are familiar. This one is from the lip. The first of the diagnostic criteria is the compact massing of the lymphocytes and plasma cells, appreciated best under low power. The plasma cell is a prominent element in syphilitic lesions, but it is not considered of as much diagnostic importance as formerly because it is recognized as a feature of many nonspecific inflammatory reactions. The second criterion is the reaction in the smaller arteries. Their walls are not only densely infiltrated with the mononuclear cells, but the accompanying endarteritis may complete the occlusion of the vessels. This combination of changes may make them difficult to identify among the richly cellular exudate.

Chancroid.—(Micro slide.) The next is an early chancroid. It is not possible to identify this less usual lesion in this early stage simply on the basis of its histologic appearance. There is some superficial ulceration. While what exudate there is, is largely perivascular as in syphilis, the dermis is markedly edematous instead of being packed with exudate.

(Micro slide.) The next section is from a later stage and shows more exudate, and while this involves the vascular walls, it is not accompanied by the endothelial reaction that is seen in the syphilitic lesion.

In the healing lesion ulceration is still evident and there is little acanthosis at its edges. The bulk of the stroma has been freed of exudate and the cells are characteristically limited to the perivascular tissue, but the lumens of those vessels are still freely patent. The exudate is not only in the perivascular tissue but there is a certain amount of invasion of the vessel walls, where it has a peculiar laminated arrangement as though the cells were lined up between the muscle layers. It is this histologic manifestation in the last stage that is suggestively diagnostic.

Granuloma Venereum.— (Lantern slide.) This is the clinical picture of primary granuloma venereum on the penis, which is difficult to differentiate from other initial sores.

In this disease, however, the lesions are usually multiple and they are not indurated as is the hard hunterian chancre. They are sometimes papillary and may be acanthotic.

There are two features in the histology of granuloma venereum, aside from the Donovan body, which I regard as characteristic. These are the large macrophages and the presence in the mononuclear exudate of small microabscesses of polymorphonuclear cells, not only in the primary sore, but also in the secondary lesion. There is little difficulty in demonstrating the Donovan bodies by hematoxylin and eosin stain, but a Gram or silver stain brings them out more sharply.

GRANULOMA ANNULARE

CASE 20.—Presented by Colonel Ash.

History.—In 1945 a blister developed on the heel of a 42 year old white woman, followed a few months later by a tumor at that site. It was diagnosed clinically as a fibroma. No general clinical data were available.

Diagnoses. — Granuloma annulare; tuberculosis; rheumatic nodule.

Colonel Ash: This is granuloma annulare showing typical necrobiosis in the deeper dermis with surrounding epithelioid and fibroblastic reaction. There is a moderate vasculitis.

RHEUMATOID NODULE

CASE 21.—Presented by Colonel Ash.

History.—A white man, aged 22, for four years had had nodules on the right forearm which became larger and firmer, but never actually painful. No general clinical data were available.

Diagnoses.—Granuloma annulare; rheumatic nodule.

Colonel Ash: Here in the rheumatic nodule are rather deep-seated foci of necrobiosis with the usual cellular response. The foci are somewhat more isolated and circumscribed than in the former case. There is active arteritis, which is not always associated with the "tubercles." Acid-fast stains are negative. The etiology in this instance is obscure.

OTHER GRANULOMATOUS LESIONS

The slides in cases 20 and 21 are representative of a group of peculiar granulomatous lesions that I will discuss at this time.

Rheumatoid Reactions. — (Micro slide.) First a few words about the rheumatoid reactions in the dermis. This section is from a 35 year old medical officer with no history of rheumatism who had had lesions on the elbow and over the knuckles of the left hand for a year or more. They were papules the size of a pin-head with no tendency toward the annular configuration of granuloma annulare. There is slight acanthosis with hypertrophy of the pegs and a little overlying hyperkeratosis which is not unusual in the skin around the elbow. Note the paler areas in the collagen and also the moderate perivascular reaction some distance from the focal lesions. Under high power the difference between so-called necrobiosis and caseation necrosis, or the necrosis of abscess formation, becomes apparent. The term "necrobiosis" is applied to death of collagen in situ. The ghosts of the collagenous fibers can be seen. In response to that necrotic material there is a surrounding epithelioid reaction, giving the general granulomatous appearance of the lesions.

Necrobiosis is the essential feature in several clinical entities—the rheumatic nodule, granuloma annulare, and necrobiosis lipoidica diabeticorum. The differentiation of these three clinical entities is difficult or impossible from histologic criteria alone. Weidman insists that the cellular reaction is not so much epithelioid as it is fibroblastic, but I am not entirely convinced of that. There may be a few Langhans giant cells, but they are not as common as in infectious granulomas.

The clinical rheumatic nodule is a small isolated papule, occurring singly or in groups. The term "rheumatic" is applied rather generically to these lesions. I imagine that they are on a hyperergic basis; I do not believe that a pathologist could tell from the histologic appearance alone whether these nodules are actually rheumatic.

Granuloma annulare is a large annular lesion with elevated margins and a smooth atrophic or scarred center. The classic location is around the wrists but the lesion may be any place; however, it is most commonly on the extremities. The necrobiosis occurs in larger areas than in the rheumatic nodule. The necrobiosis associated with diabetes practically always involves the lower extremities and occurs most frequently in older, fat women (fig. 10).

The vasculitis in this group of conditions is not particularly different from that in the erythema induratum group. It is a nonspecific, perivascular accumulation of small mononuclear cells with some invasion of the wall but with no endothelial or obliterative reaction. There is certainly nothing that would suggest the lesions of the type seen in lupus or periarteritis nodosa.

(Micro slide.) This slide is from a 55 year old man who had had a typical lesion of granuloma annulare on his right hand for fifteen years. It is difficult to differentiate this histologically from the previous section of the rheumatic nodule except that the process is a bit more diffuse. There is the same type of infiltration of the dermis around the paler foci of necrobiosis and a perivascular inflammatory reaction, but no reaction in the blood vessels themselves. In the subcutaneous tissues there is a little extension of this reaction, but it is different

from the picture in pure nonsuppurative panniculitis.

Necrobiosis Lipoidica Diabeticorum.—(Micro slide.) The next section is necrobiosis lipoidica diabeticorum from a 43 year old woman who had had a lesion on her wrist for four years, associated with others on her leg. Diabetes had been diagnosed only two years previous to biopsy. The case is of considerable interest not only because the lesion was on her arm but because it had been present two years before diabetes was recognized. I want to emphasize this point: if the dermatologist makes the diagnosis of necrobiosis lipoidica diabeticorum, his report should not be rejected just because the patient does not happen to have clinical diabetes; the diabetes may not become evident for several years after the cutaneous lesions. This type of necrobiosis is differentiated from the other two by the lipoid element, which, incidentally, is not always demonstrable. In addition, since it is on a diabetic basis the vascular reaction may be more severe. As a matter of fact, some pathologists regard the necrobiosis as secondary to diabetic arteriosclerosis.

Bromoderma.—Another granuloma for which the pathologist must be on the alert is bromoderma. This manifests itself in two ways: (1) by granulomatous, and (2) by pyogenic reactions; the lesions may be definitely pustular, and there is considerable acanthosis, almost verrucous in some instances.

(Micro slide.) This patient has received bromide therapy for some time. Microscopically, there is acanthosis amounting to epitheliomatous hyperplasia, and granulomatous foci of epithelioid and giant cells. The picture is practically the same in iododerma.

LUPUS ERYTHEMATOSIS

CASE 22.—Presented by Colonel Ash.

History.—A Negro man, aged 20, had had a lesion on his cheek for about ten months with a history of earlier lesions on hands and arms. A biopsy specimen was reported chronic granulomatous inflammation. Serologic tests and roentgenograms of the chest were negative. Clinically the lesion was discrete, circinate, and measured about 1.5 by 2 cm., with elevated margins, loss of pigment, and slight induration in the center.

Diagnosis.—Lipus erythematosis, discoid type.

Colonel Ash: Yes, that is my diagnosis. This is one of the dermatoses in which the pathologic features are suggestive but not absolutely diagnostic. Academically the histologic features can be enumerated and the diagnosis made, but unfortunately all of the features are not always present or typical in appearance when they are. Clinical correlation is a help in the identification.

These features, fairly well exemplified in this slide, are alternate areas of atrophy and hypertrophy of the epidermis; parakeratosis; keratinization of the hair follicles; areas of liquefaction of basal cells; mononuclear exudate extending down along the skin appendages; and dilatation of superficial blood vessels (clinical erythema). Certain dermal pathologists insist that elastosis and collagenous degeneration of the dermis are necessary for the diagnosis. While these changes are usually present, the diagnosis is still possible in their absence. In this slide will be noted the loss of pigment in the basal layer and the foci of chromatophores in the upper dermis.

TUBERCULOUS DERMATOSES AND TUBERCULIDS

I will use case 22 as an excuse for a superficial discussion of the tuberculous dermatoses and the related "tuberculids." They are both complicated subjects. Beside the actual tuberculous processes which manifest themselves in a variety of clinical forms, there are the so-called "ids" in which relationship to tuberculosis is only presumptive. Forgetting that one group may be actually tuberculosis and that the other is evidence of hyperergic or immune reactions, the tuberculous dermatoses can be divided into two groups: (1) those that are focal or localized, spreading by contiguity, and (2) those that are the result of vascular dissemination.

The best example of the focal lesion is the inoculation tubercle—the classic anatomic tubercle which results from a direct infection with tuberculous material, and because of immunity or other factors remains localized. Then there is the clinical entity scrofuloderma, which is direct infection of the skin along a fistulous tract from an underlying tuberculous process, such as lymphadenitis or tuberculous osteomyelitis. Lupus vulgaris is a focal form and characteristic both clinically and histologically. Another definite clinical entity of the localized type is tuberculosis verrucosa cutis, in which, in addition to the tuberculous process, there is a verrucous reaction of the epidermis. It resembles lupus, particularly clinically; in fact some dermatologists consider it a form of lupus vulgaris. In the older days lupus erythematosis was considered to be on a tuberculous basis, but that idea has been dropped now, certainly insofar as the disseminated form is concerned, and it is classed among the vascular diseases and will be referred to later.

Of the dermatoses due to hematogenous spread of the infection, tuberculosis cutis lichenoides is one in which groups of lichenoid papules appear on various parts of the body. These show granulomatous reaction and contain tubercle bacilli. Another is tuberculosis cutis papulo-necrotica, in which in addition to the tubercles there is infarct-like necrosis resulting from involvement of the blood vessels. Disseminated follicular tuberculid—the rosacea-like tuberculid of Lewandowsky—is not common, but it has a characteristic histologic picture. There is acne-like involvement of the follicles to

which tubercles in the dermis are closely applied. Lichen nitidus occurs as groups of small papules on flexor surfaces, genitalia, abdomen, and sometimes in more generalized distribution. It also has specific histologic features, including tubercles situated in the apices of the papillae. These last two forms, especially lichen nitidus, are now regarded as tuberculids.

There is the other group of focal lesions that have been more or less attributed to tuberculosis, but which clinically and pathologically are more closely associated with certain vascular lesions and are on a more controversal etiologic basis than those enumerated above. These are called collectively tuberculosis cutis induratum and will be discussed with case 23.

Sarcoid Tubercle.—I shall not go into an extensive discussion of sarcoid, the pathogenesis of which is so controversial. I tentatively consider it a tuberculid having the same relation to tuberculosis that tuberculoid leprosy has to the full-blown disease.

(Lantern slide.) In this section will be recognized the typical histologic picture of the sarcoid tubercle, composed of robust epithelioid cells, only an occasional giant cell, and no necrosis. I show it to call attention to the asteroid body which Schaumann described in sarcoid of the lymph node and which was regarded for some time, and I am afraid still is by some, as pathognomonic of Boeck's sarcoid. No doubt most pathologists have seen it in other granulomas as I have, appearing in a variety of shapes.

Lupus Vulgaris. — (Micro slide.) This slide is from one of several lesions which had been present two and a half years on the nose of a 60 year old woman and which were clinically typical of lupus vulgaris. Usually there is a certain amount of verrucous hyperplasia of the epidermis. In this case there is some atrophy of the epidermis and complete absence of the rete pegs. The dermis is greatly thickened by the typical tubercles.

Tuberculosis Verrucosa Cutis. — (Micro slide.) This is an example of tuberculosis verrucosa cutis, really one of the forms of inoculation tuberculosis, and is classed by some dermatologists with lupus vulgaris. The tubercles are characteristically in the papillary layer of the dermis rather than diffusely distributed as in orthodox lupus vulgaris. In addition, there is a marked acanthosis of the overlying epithelium. The distribution of the tubercles is in the papillary layer, but not necessarily in close association with the follicles as in the Lewandowsky form. As I just stated, this is really a form of inoculation tuberculosis and is simply a modified lupus vulgaris.

Rosacea-Like Tuberculid.—(Micro slide.) This section is from the Lewandowsky type of rosacea-like tuberculid. This is from a 34 year old white man who had had symmetrically distributed papillary eruptions on the lower lids and around the mouth. The lesion was considered clinically to be epithelioma adenoides cysticum; and the specimen was submitted to the Army Institute of Pathology with the pathologic diagnosis of Boeck's sarcoid. There was no history of tuberculosis and no tuberculin test was made. Microscopically it is a superficial lesion involving the papillary layer of the dermis. Note the typically close relationship of the tubercles with the hair follicles. Practically every follicle of any size has one or more such tubercles adherent to it. Although tubercle bacilli are not usually demonstrable in the well developed lesion, they have been reported in the early stage.

Lichen Nitidus.—(Micro slide.) The next specimen is lichen nitidus. This is from a papule in the scapular region of a white woman aged 22. For nine months papules had been generally distributed over large areas of her arms, legs, and hands. Lichen nitidus has a specific histologic picture; that is an unusual comfort in dermopathology because there are not many skin lesions which may be diagnosed from microscopic features alone. Pathologists should not attempt to be too specific in their diagnosis in skin biopsies without some notion of the clinical picture. This is one specialty in which close collaboration between the clinician and the pathologist is essential.

To return to the slide, note the lichenoid distribution of the exudate. It is confined to the upper papillary layer of the dermis and intermingles with the basal cells of the epidermis. There may be a little perivascular reaction in the deeper corium but no diffuse involvement. That is one of the features that makes identification of uncomplicated lichen planus possible. The specific feature in lichen nitidus is the situation of tubercles at the tops of the papillae. They are expansile to the point that the overlying epidermis is highly atrophic, and it may become eroded. Note that the tubercles do not show the immediate relationship to the hair follicles as in the Lewandowsky tuberculid.

PANNICULITIS, NONSUPPURATIVE

CASE 23.—Presented by Capt. J. T. Ellis, Brooke General Hospital, Fort Sam Houston.

History.—A white woman, aged 31, had had episodes of the outbreak of painful subcutaneous nodules for the past two and a half years. Frequently the skin over these nodules was reddened. Usually nodules

persisted for four or five days and disappeared without residua; however, a few persisted for from two to three weeks. There was no weight loss, no chills or fever. The nodules had no consistent pattern of distribution, but appeared on almost any part of the body. The patient could not relate these outbreaks to any particular food or to abdominal distress. Physical examination revealed a well-developed and slightly obese woman who did not appear acutely ill. Over the lower extremities were a few scattered subcutaneous nodules, about 3 cm. in diameter, firm, moderately tender, and the overlying skin was slightly reddened. The results of laboratory tests were essentially normal. The specimen was taken from the posterior aspect of the left leg.

Diagnoses—Weber-Christian's disease; nonsuppurative panniculitis, granuloma annulare.

Colonel Ash: This is nonsuppurative panniculitis or Weber-Christian's disease. I would like to compare the vascular reaction in this slide with that in the deeper portions of the slide in case 21, the rheumatic nodule. They are similar, and without the areas of necrobiosis, there might be difficulty in differentiating them. Similarly, the tuberculoid-indurative conditions, lupus erythematosis and periarteritis nodosa, have features in common. In spite of the fact that as groups and singly they have points of difference both clinically and pathologically, one wonders if there is not a common factor in their pathogenesis even when in individual cases there is association with a specific disease. More and more is it becoming evident that our bodily defenses may create their own pathologic conditions in reacting with or against an antigen.

ERYTHEMA INDURATUM

It is likely that the large majority of erythema induratum lesions are on a tuberculous basis, but there are two schools of thought. The Mayo group thinks that from 40 to 75 per cent of these lesions are associated with tuberculosis; not necessarily that the lesion itself is actual tuberculosis, but that it is an "id"; while the nodular form, erythema nodosum, is probably not on a tuberculous basis. There are other entities that are distinguishable clinically but which are difficult if not impossible to differentiate histologically, such as lupus pernio and the so-called nodular vascular lesions which occur in the lower extremities. These again as individual lesions are difficult to separate histologically from lupus erythematosis, nonsuppurative panniculitis, and periarteritis nodosa. The clinical differentiation is not so difficult because the diseases in the last group have a more widespread distribution.

(Micro slide.) This first slide is from a tuberculous type of erythema induratum. It is from a 54 year old woman who had had the lesion on her ankle for three weeks. The condition usually has a long history, and this patient had had recurrent lesions on her legs for twenty years. Fifteen years previously she had had tuberculous adenitis of the neck. The classic picture of erythema induratum is that it occurs in young women in their teens or early twenties, affects the skin of the calf of the leg, and is usually papular. Histologically, inflammation is predominant in the deeper dermis and in the subdermal tissue. The inflammatory reaction in the dermis, particularly about the blood vessels, is the chief point of differentiation from panniculitis. There are secondary changes, including necrobiosis of the collagen. The inflammatory reaction may be frankly tuberculous and there may actually be tubercle bacilli. The condition, however, is not necessarily on a tuberculous basis but may be dependent on a local vasculitis. The latter is not the type of reaction that is found in either lupus erythematosis or in the nodose type of erythema. There is little or no hyaline necrosis of vessel walls. The inflammation is largely mononuclear but there may be a few polymorphonuclear leukocytes, not only in the perivascular spaces, but also invading the walls, although not to the extent seen in the more specific, disseminated vascular diseases.

(Micro slide.) This is another instance of erythema induratum on a tuberculous basis. It is from a 16 year old white girl, the classic age, who had it on the calf of her leg, the classic site. I show it for two reasons, not only because of the tubercles but to introduce another term which the dermatologists use for the lesion, tuberculosis indurativa (fig. 11). In this stage there is some inflammatory reaction in the dermis, most of it in the deeper tissues and through the subcutaneous fat. It is quite different from nonsuppurative panniculitis. There is definite tubercle formation including Langhans giant cells. In addition to this granulomatous involvement of the fat, there is a less specific infiltration of exudate in other areas of the connective tissue, and a change in the fat itself. Notice that some of the fat cells have been replaced by young connective tissue, a feature termed "Wucher replacement atrophy of fat." This contributes to the characteristic induration clinically and to the scarring of old lesions. In the latter, there is atrophy of the overlying epithelium.

NODULAR VASCULITIS

(Micro slide.) This section is from a clinical erythema nodosum, not the nodular type of erythema induratum. It is from a white woman age 33, again from the leg. These are larger subcutaneous lesions than those of tuberculous erythema. Montgomery now speaks of this type as nodular vasculitis, assuming that the majority of these indurated conditions that are not tuberculous are on a vascular basis. There are no tubercles in this particular section and it is more like Weber-Christian's disease than any example of erythema nodosum I have seen so far. There

is extensive involvement of the subcutaneous tissues with considerable Wucher atrophy of the fat. The blood vessels show an active involvement that is distinguishable, however, from that seen in the generalized vascular diseases. There is practically no change in the endothelium or in the muscularis of the vessels but there is active perivascular inflammatory reaction which has involved the adventitia. There is no hyaline necrosis of the vessel walls. There are more polymorphonuclear leukocytes and more fat necrosis in this lesion than will be found in Weber-Christian's disease. The absence of tubercle differentiates it from the tuberculous indurations.

DERMATITIS HERPETIFORMIS

CASE 24.—Presented by Colonel Ash.

History.—A white man, aged 29 years, had had vesicles under the arms, on the back, over the sternum, over the legs and feet, and over the back of the head and neck for about two months. The lesions had itched a great deal. The vesicles were surrounded by erythematous halos and contained a clear straw-colored fluid.

Diagnoses.—Duhring's disease; Darier's disease; pemphigus.

Colonel Ash: The pathologists will probably not understand the term Duhring's disease, so I will call this lesion dermatitis herpetiformis. I like the former term, however, because of the fond memories of my old professor of dermatology at the University of Pennsylvania.

VESICULAR DERMATOSES

The vesicular dermatoses may be divided conveniently, certainly pathologically, into three groups in which the vesicles are formed (1) by the accumulation of fluid between the epithelial cells—intercellular edema—to produce the pressure vesicle or bulla (pemphigus is the type disease); (2) by intracellular edema — ballooning degeneration— to produce reticulated vesicles (variola is the type disease); and (3) by a combination of intercellular edema and hydropic degeneration of the epithelium—spongiosis (eczema is the type disease). I will not include this last in my discussion because the histology of the group is nonspecific. This herpetiform type of lesion results from an accumulation of fluid in the epidermis, mechanically raising the epithelium to form a blister. In dermatitis herpetiformis the process usually begins in the basal layer and the underlying papillae so that the whole epidermis is lifted up from the dermis, but it may begin further up in the squamous portion, when the basal layer will remain adherent to the papillary layer of the dermis. There is in addition an inflammatory reaction which involves the papillary layer. The intensity of this reaction is characteristic, especially the edema, as it involves the papillary layer. This usually extends laterally to involve dermis beyond the scope of the vesicle.

Dermatitis Herpetiformis.—(Micro slide.) There is not much change in the epidermis except at the site of the vesicle. Here the epithelium has been raised up leaving the basal cells still adherent to the dermis. The vesicle is filled with serum and fibrillar strands that are fibrin and necrotic epithelium. There is also a certain amount of cellular exudate which contains a fair percentage of eosinophils. There is edema, congestion, and exudate in the papillary layer of the dermis. At the edge of the vesicle some of the epithelial cells are hydropic. It is these that become fibrillar strands in the vesicle. This is not, however, the "ballooning degeneration" that appears in the variola group of vesicular dermatoses.

Pemphigus Vulgaris.—(Micro slide.) The next slide is from an early phase of pemphigus vulgaris. It is from a necropsy specimen of the right thigh of a 34 year old man. He had had the vesicle for about three weeks. It was possible to get so early a lesion because the patient died an accidental death. In this early lesion it is possible to see the difference in the vesicle formation from that in herpetiform vesiculations. The change begins in the upper layers of the epidermis leaving considerable epithelium still intact on the dermis. A striking point about pemphigus vulgaris is the comparative benignancy of the skin reaction when it is considered that the disease is practically always fatal. The epithelium has been lifted up by the accumulation of an intercellular edema, the same pressure type of bulla as in herpertiform lesions. A feature of this particular slide is the attempt at regeneration of the basal epithelium. In this disease eosinophils are characteristic and are usually present in greater numbers than in the herpetiform lesions. The additional differences from the latter are the less conspicuous lateral reaction in the dermis, the absence of the reticular character of the vesicle, and the comparative freedom of the dermis from inflammatory reaction.

Pemphigus Vegetans.—(Micro slide.) This is another form of pemphigus which, while clinically serious, is not as widespread or as usually fatal as pemphigus vulgaris. It may be sharply localized. This is pemphigus vegetans. The section is from the arm of a 30 year old man who had had the disease for five months. This is one of the dermatoses which is reasonably specific histologically and is another of the pressure bulla type. There is epitheliomatous hyperplasia of the

epithelium. This accounts for its verrucous character clinically, and also makes it similar to bromoderma, especially because of the microabscesses present. The two differentiating features from bromoderma, however, are the vesication and the fact that the microabscesses are composed of eosinophils. The microabscesses and the acanthosis differentiate it from pemphigus vulgaris. These abscesses are not only in the upper corium but also in the hypertrophied epithelium.

Herpes Zoster.—(Micro slide.) The second group of the vesicle forming diseases consists of those due to viruses. It includes herpes simplex, herpes zoster, and the acute exanthems, chickenpox and smallpox. In these the vesicles are formed by the so-called ballooning degeneration of the individual epithelial cells. They are not the pressure vesicles of the pemphigus-herpetiform group nor the spongiosis type of the eczemas. This slide is from herpes zoster (fig. 12). It is from a 59 year old man who had the condition for four years. This is a colliquative vesication and the vesicles are usually higher in the epidermis than those of either pemphigus or dermatitis herpetiformis. Notice that the vesicle shows a certain amount of reticulation, an exaggeration of the reticulation in dermatitis herpetiformis. As the edge of the vesicle is examined under higher power, the ballooning degeneration is apparent. The individual epithelial cell becomes hydropic to the point where the cell expands until it becomes a thin, hyaline, fibrillar ring. There is a rather marked inflammatory reaction that in this disease involves the vessels and the deeper dermis, extending, in fact, into the subcutaneous tissue. There is much more extensive inflammatory reaction in herpes zoster than in the more malignant dermatoses of the pemphigus group.

Chickenpox.—(Micro slide.) Another example of the virus vesications is chickenpox Unlike pemphigus, chickenpox has an inflammatory reaction which is severe, considering the clinical mildness of the disease. It is in this lesion that the French speak of the change in the epithelial cells as "alteration cavitaire," a synonym for ballooning degeneration or intracellular hydrops. In this instance the epithelium has been almost entirely elevated by the "ballooning" change. In the earlier stages the epithelium retains its identification, but as the hydropic cells swell they fuse and become large vesicles reticulated by the remains of the cell walls.

Smallpox.—(Lantern slide.) This slide is from smallpox. The reticulation of the vesicle is not as stout as usual. It is an early vesicle and the contents are still serous rather than purulent, as they will become later. It is not umbilicated as a smallpox vesicle usually is.

In virus lesions various cell inclusions may be identified. Typical is the eosinophilic intranuclear mass. This may also be found in cells of the dermis. The Guarnieri body is acidophilic also but is in the cytoplasm of the epithelial cell. There may also be a basophilic cytoplasmic inclusion which is not so typical of the exanthems but is seen more commonly in some of the conjunctival inflammations, trachoma, for example.

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MISCELLANEOUS

COMING MEETINGS AND CLINICS

State Medical Association of Texas, San Antonio, May 2-5, 1949. Dr. Tate Miller, Dallas, President; Dr. Harold M. Williams, 700 Guadalupe St., Austin, Secretary.

American Medical Association, Atlantic City, June 6-10, 1949. Dr. R. L. Sensenich, South Bend, Ind., President; Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

NATIONAL AND REGIONAL

American Academy of Allergy. Dr. Will C. Sprain, New York, President; Dr. Theodore L. Squier, 424 East Wisconsin Ave., Milwaukee, Secretary.

American Academy of Dermatology and Syphilology, Chicago, December 4-9, 1948. Dr. Clyde L. Cummer, Cleveland, President; Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, N. Y., Secretary.

American Academy of General Practice, Cincinnati, March 7-9, 1949. Dr. Paul A. Davis, Akron, Ohio, President; Dr. Mac F. Cahal, 20 N. Wacker Drive, Chicago 6, Acting Executive Secretary.

American Academy of Neurological Surgery. Dr. William S. Keith, Toronto, Canada, President; Dr. T. C. Erickson, 1300 University Ave., Madison 5, Wis., Secretary.

American Academy of Ophthalmology and Otolaryngology. Dr. C. H. McCaskey, Indianapolis, President; Dr. W. L. Benedict, Mayo Clinic, Rochester, Minn., Secretary.

American Academy of Pediatrics. Dr. John A. Toomey, Cleveland, President; Dr. C. G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association for Thoracic Surgery. Dr. Alton Ochsner, New Orleans, President; Dr. Brian Blades, George Washington University School of Medicine, Washington, D. C., Secretary.

American Association of Genito-Urinary Surgeons. Dr. C. E. Burford, St. Louis, President; Dr. Norris J. Heckel, 122 S. Michigan Ave., Chicago, Secretary.

American Association of Obstetricians, Gynecologists, and Abdominal Surgeons. Dr. Robert D. Mussey, Rochester, Minn., President; Dr. L. A. Calkins, University of Kansas Medical Center, Kansas City 3, Secretary.

American College of Physicians, New York, March 28-April 1, 1949. Dr. Walter W. Palmer, New York, President; Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Secretary.

American College of Radiology, Atlantic City, June 5, 1949. Dr. E. P. Pendergrass, Philadelphia, President; W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Secretary.

American College of Surgeons. Dr. Arthur W. Allen, Boston, President; Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine. Dr. H. Worley Kendell, Chicago, President; Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Dermatological Association. Dr. Harry R. Foerster, Milwaukee, President; Dr. L. A. Brunsting, 102 2nd. Ave., S. W., Rochester, Minn., Secretary.

American Gastro-Enterological Association, Atlantic City, June 3-4, 1949. Dr. A. F. R. Andresen, Brooklyn, President; Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco, Secretary.

American Gynecological Society. Dr. Edmund A. Schumann, Philadelphia, President; Dr. Howard Taylor, Jr., 842 Park Ave., New York 21, Secretary.

American Hospital Association. Mr. Joseph G. Norby, Milwaukee, President; Mr. George P. Bugbee, 18 E. Division St., Chicago, Executive Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, April, 1949. Dr. John J. Shea, Memphis, Tenn., President; Dr. C. S. Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

American Neurological Association. Dr. Stanley Cobb, Boston, President; Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

American Ophthalmological Society. Dr. Henry C. Haden, Houston, President; Dr. W. S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Orthopedic Association. Dr. Robert I. Harris, Toronto, Canada, President; Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

American Otological Society. Dr. Marvin F. Jones, New York, President; Dr. Gordon D. Hoople, 713 E. Genesee St., Syracuse 3, N. Y., Secretary.

American Pediatric Society. Dr. Grover F. Powers, New Haven, Conn., President; Dr. Henry G. Poncher, 1819 W. Polk St., Chicago 12, Secretary.

American Proctologic Society. Dr. George H. Thiele, Kansas City, Mo., President; Dr. Vernon G. Jeurink, 1612 Tremont Pl., Denver 2, Secretary.

American Psychiatric Association. Dr. Winfred Overholser, Washington, D. C., President; Dr. Leo H. Bartemeier, General Motors Bldg., Detroit, Secretary.

American Public Health Association. Dr. Martha M. Eliot, Washington, D. C., President; Dr. R. M. Atwater, 1790 Broadway, New York 19, Secretary.

American Roentgen Ray Society. Dr. J. B. Edwards, St. Louis, President; Dr. H. Dabney Kerr, University Hospital, Iowa City, Secretary.

American Society of Anesthesiologists. Dr. Charles F. McCuskey, Los Angeles, President; Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22, Secretary.

American Society of Clinical Pathologists. Dr. Osborne A. Brines, Detroit, President; Dr. Clyde G. Culbertson, Indiana University School of Medicine, Indianapolis, Secretary.

American Surgical Association. Dr. Elliott C. Cutler, Boston, President; Dr. W. M. Firor, Johns Hopkins Hospital, Baltimore 5, Secretary.

American Urological Association, Los Angeles, May 16-19, 1949. Dr. Charles C. Higgins, Cleveland, President; Dr. T. D. Moore, 899 Madison Ave., Memphis 3, Tenn., Secretary.

Association of American Physicians, Atlantic City, May 3-4, 1949. Dr. Francis G. Blake, New Haven, President; Dr. H. M. Thomas, Jr., 1201 N. Calvert St., Baltimore 2, Secretary.

Central Neuropsychiatric Association. Dr. William C. Menninger, Topeka, Kan., President; Dr. Lee Eaton, Mayo Clinic, Rochester, Minn., Secretary.

International College of Surgeons, U. S. Chapter. Dr. Herbert Acuff, Knoxville, Tenn., President; Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.

National Tuberculosis Association, Dr. Herbert L. Manz, Kansas City, Mo., President; Dr. H. Stuart Willis, 1790 Broadway, New York 19, Secretary.

Radiological Society of North America. Dr. L. Henry Garland, San Francisco, President; Dr. D. S. Childs, Medical Arts Bldg., Syracuse 2, N. Y., Secretary.

Southern Medical Association, Cincinnati, November 14-17, 1949. Dr. Oscar B. Hunter, Washington, D. C., President; C. P. Loranz, 1020 Empire Bldg., Birmingham, Ala., Secretary.

Southern Psychiatric Association, Dallas, December 6-7, 1948. Dr. Guy F. Witt, Dallas, President; Dr. Newdigate M. Owensby, 384 Peachtree St. N. E., Atlanta, Ga., Secretary.

Southern Surgical Association, White Sulphur Springs, December 7-9, 1948. Dr. E. P. Lehmann, Charlottesville, Va., President; Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Southwest Allergy Forum, El Paso, April 4-5, 1949. Dr. Sim Hulsey, Fort Worth, President; Dr. O. E. Egbert, First National Bank Bldg., El Paso, Secretary.

Southwestern Medical Association. Dr. Joseph M. Greer, Phoenix, Ariz., President; Dr. Wickliffe R. Curtis, First National Bank Building, El Paso, Secretary.

Southwest Regional Cancer Conference, Fort Worth, November 9, 1949. Secretary, 209 Medical Arts Bldg., Fort Worth.

United States-Mexico Border Public Health Association, Nogales, Ariz., and Nogales, Mexico, 1949. Dr. Victor Ocampo Alonzo, Hermosillo, Mexico, President; Dr. M. F. Haralson, 314 U. S. Court House, El Paso, Secretary.

STATE

Texas Association of Obstetricians and Gynecologists, Dallas, 1949. Dr. Julius McIver, Dallas, President; Dr. George F. Adam, 4115 Fannin, Houston, Secretary.

Texas Chapter, American Academy of General Practice. Dr. J. B. Copeland, San Antonio, President; Dr. W. P. Higgins, Jr., Medical Arts Bldg., Fort Worth, Secretary.

Texas Chapter, American College of Chest Physicians. Dr. Elliott Mendenhall, Dallas, President; Dr. Charles J. Koerth, Kerrville, Secretary.

Texas Club of Internists. Dr. Julian C. Barton, San Antonio, President; Dr. Victor E. Schulze, 219 S. Magdalen St., San Angelo, Secretary.

Texas Dermatological Society, San Antonio, May, 1949. Dr. D. T. Gandy, Houston, President; Dr. W. Harris Connor, 601 Medical Arts Bldg., Houston, Secretary.

Texas Heart Association. Dr. Walter B. Whiting, Wichita Falls, President; Dr. Merritt B. Whitten, 1421 Medical Arts Bldg., Dallas, Secretary.

Texas Hospital Association, Galveston, April 19-21, 1949. Mr. C. J. Hollingsworth, Lubbock, President; Mrs. Ruth Barnhart, 2210 Main St., Dallas, Secretary.

Texas Neuropsychiatric Association. Dr. M. J. Cooper, San Antonio, President; Dr. David Wade, 604 Capital National Bank Bldg., Austin, Secretary.

Texas Orthopedic Association, San Antonio, May 2, 1949. Dr. Ruth Jackson, Dallas, President; Dr. Margaret Watkins, 3629 Fairmount St., Dallas, Secretary.

Texas Pediatric Society, San Antonio, October, 1949. Dr. John Glen, Houston, President; Dr. James Walker, 3616 Tulsa Way, Fort Worth, Secretary.

Texas Public Health Association, San Antonio, February 20-23, 1949. Dr. Austin E. Hill, San Antonio, President; Mr. Earle W. Sudderth, Dallas County Health Department, Court House, Dallas, Executive Secretary.

Texas Radiological Society, Fort Worth, January 7-8, 1949. Dr. L. M. Garrett, Corpus Christi, President; Dr. R. P. O'Bannon, 650 Fifth Ave., Fort Worth, Secretary.

Texas Railway and Traumatic Surgical Association, San Antonio, May 2, 1949. Dr. Denman C. Hucherson, Houston, President; Dr. W. F. Parsons, First National Bank Bldg., Fort Worth, Secretary.

Texas Rheumatism Association. Dr. Howard C. Coggeshall, Dallas, President; Dr. J. Paul Thomas, Medical Arts Bldg., Dallas, Secretary.

Texas Society for Mental Hygiene, Dallas, March 3-5, 1949. Dr. Ozro T. Woods, Dallas, President; Mrs. Elizabeth F. Gardner, 1617 Watchhill Road, Austin 21, Executive Secretary.

Texas Society of Anesthesiologists. Dr. J. C. Youngblood, Houston, President; Dr. H. C. Slocum, 928 Strand, Galveston, Secretary.

Texas Society of Gastroenterologists and Proctologists, San Antonio, May 2, 1949. Dr. Alvin Baldwin, Dallas, President; Dr. Carl Giesecke, 1602 Nix Professional Bldg., San Antonio, Secretary.

Texas Society of Ophthalmology and Otolaryngology, San Antonio, December, 1949. Dr. August J. Streit, Amarillo, President; Dr. John L. Matthews, 929 Nix Professional Bldg., San Antonio, Secretary.

Texas Society of Pathologists, Dallas, January 30, 1949. Dr. W. W. Coulter, Sr., Houston, President; Dr. C. T. Ashworth, 604 Medical Arts Bldg., Fort Worth, Secretary.

Texas State Urological Society, Temple, February 7, 1949. Dr. Michael K. O'Heeron, Houston, President; Dr. E. O. Bradfield, Scott and White Clinic, Temple, Secretary.

Texas Surgical Society, Houston, April 5-6, 1949. Dr. E. P. Bunkley, Stamford, President; Dr. Truman G. Blocker, 927 Strand, Galveston, Secretary.

Texas Tuberculosis Association, Tyler, April 8-9, 1949. Dr. Elliott Mendenhall, Dallas, President; Miss Pansy Nichols, 208 E. Ninth, Austin, Executive Secretary.

DISTRICT

Second District Society. Dr. R. B. G. Cowper, Big Spring, President; Dr. Carl Uthoff, Big Spring, Secretary.

Third District Society, Amarillo, April 12-13, 1949. Dr. C. E. High, Pampa, President; Dr. Kenneth Flamm, Amarillo, Secretary.

Fourth District Society, San Angelo, October, 1949. Dr. J. C. Young, Coleman, President; Dr. Charles F. Bailey, Ballinger, Secretary.

Fifth and Sixth Districts Society, Corpus Christi, July, 1949. Dr. D. R. Knapp, Kerrville, President; Dr. Charles Tennison, Nix Professional Building, San Antonio, Secretary.

Seventh District Society. Dr. David Wade, Austin, President; Dr. Joe W. Bailey, 1411 San Antonio St., Austin, Secretary.

Eighth, Ninth and Tenth Districts Society. Dr. T. O. Woolley, Orange, President; Dr. James Greenwood, Jr., 518 Medical Arts Bldg., Houston 2, Secretary.

Eleventh District Society. Dr. Lynn Hilburn, Henderson, President; Dr. C. B. Young, 929 S. Confederate, Tyler, Secretary.

Twelfth District Society, Temple, January 11, 1949. Dr. R. R. White, Temple, President; Dr. H. F. Connally, Jr., Amicable Bldg., Waco, Secretary.

Thirteenth District Society. Dr. Fred Harrell, Olney, President; Dr. S. W. Wilson, Medical Arts Bldg., Fort Worth, Secretary.

Fourteenth District Society, Waxahachie, January 11, 1949. Dr. W. I. Southerland, Sherman, President; Dr. John Bagwell, Medical Arts Building, Dallas, Secretary.

Fifteenth District Society. Dr. W. S. Terry, Jefferson, President; Dr. James Harris, Marshall, Secretary.

CLINICS

Dallas Southern Clinical Society, Dallas, March 14-17, 1949. Miss Betty Elmer, Medical Arts Bldg., Dallas 1, Executive Secretary.

International Post-Graduate Medical Assembly of Southwest Texas, San Antonio, January 25-27, 1949. Dr. John J. Hinchey, 643 Moore Bldg., San Antonio 5, Secretary.

New Orleans Graduate Medical Assembly, New Orleans, March 7-10, 1949. Dr. Woodard D. Beacham, Room 105, 1430 Tulane Avenue, New Orleans 12, Secretary.

North Texas-Southern Oklahoma Fall Clinical Conference, Wichita Falls, October 19, 1949. Dr. Charles H. Brown, Wichita Falls, Program Chairman.

Oklahoma City Clinical Society Conference, Oklahoma City, October 24-27, 1949. Muriel R. Waller, 512 Medical Arts Bldg., Oklahoma City 2, Executive Secretary.

Post Graduate Medical Assembly of South Texas, Houston, December 7-9, 1948. Dr. E. Trowbridge Wolf, 229 Medical Arts Bldg., Houston, Secretary.

ARMY PROFESSIONAL PROCUREMENT

Army and Air Force recruiting stations are receiving suggestions from their Washington headquarters for instituting a program which will serve to increase the number of volunteers in medicine, dentistry, nursing, pharmacy, psychology, nutrition, occupational therapy, and related fields by securing the cooperation of professional societies in the recruiting station area.

The literature being sent to each recruiting station points out that representatives from the various professional and special fields should be invited to become members of a professional manpower committee which will initiate a professional personnel procurement program as a long-term community project. The nationwide program is designed to cooperate with the many professional organizations which are already launching plans of their own to see that military needs are met without draining the resources of the civilian population.

STREPTOMYCIN IN TUBERCULOSIS— REPORT OF CHEST PHYSICIANS

A report on streptomycin therapy recently drawn up by the Committee on Chemotherapy and Antibiotics of the American College of Chest Physicians represents the combined experiences of the various groups in this country which are doing investigational work on this subject, including several outstanding medical centers, representatives of the Veterans Administration, and Army hospitals. This report, Dr. Edwin R. Levine, Chicago, chairman of the Committee on Management and Treatment of Diseases of the Chest of the college, points out, contains authoritative information on indications, dosage, and duration of treatment for the use of streptomycin in tuberculosis. It is summarized below:

Indications for Treatment

Nearly all forms of tuberculosis respond to treatment with streptomycin in some degree. However, the drug should by no means be used indiscriminately.

Pulmonary Tuberculosis.—It is extremely difficult to lay down hard and fast rules for the use of streptomycin in pulmonary tuberculosis. Especial care in the selection of cases is necessary. The drug has its greatest usefulness in cases with an appreciable amount of exudative disease. In some other cases streptomycin is responsible for symptomatic improvement and the prevention of complications.

1. Definitive treatment. This category includes chiefly progressive lesions of recent origin with little or no destruction of tissue, such as progressive primary tuberculosis and tuberculosis due to hematogenic and bronchiogenic dissemination.

2. Preparation for surgical procedures, including temporary and permanent collapse and excisional surgery. In some cases pneumothorax can be instituted sooner and with greater safety after a course of streptomycin. Not infrequently the drug is of great value in preparing patients as candidates for thoracoplasty. As prophylaxis, streptomycin should be used routinely in excisional procedures.

It must be emphasized again and again that streptomycin is *not* a substitute for sanatorium care and other proven procedures. Rather it is a valuable adjunct to these other measures.

Extrapulmonary Tuberculosis. — Streptomycin is the only treatment available in miliary tuberculosis and tuberculous meningitis. In such cases early and intensive treatment is imperative. Streptomycin is the treatment of choice for tuberculous sinuses, tuberculosis of the oropharynx, larynx, and tracheobronchial tree, tuberculous enteritis and peritonitis, tuberculous otitis media, and tuberculous pericarditis. In renal tuberculosis, symptomatic improvement is usually prolonged and bacterial conversion occurs in some cases. Tuberculosis of the bones and joints is often improved by streptomycin but chemotherapy is not a substitute for orthopedic surgery when this is indicated.

Streptomycin is valuable as preoperative and postoperative treatment of tuberculosis in surgery of the genito-urinary tract, surgery of bones and joints, pericardiolysis, incision and drainage of abscesses, and fistulectomy.

Administration

Streptomycin is administered by intramuscular or deep subcutaneous injection. The optimal regimen for the administration of streptomycin has not been determined. In most forms of tuberculosis results appear to be satisfactory when a dose of from .5 to 1 Gm. a day is administered in one or two injections for from six to eight weeks. With this mode of therapy complications are infrequent and in most cases their clinical importance may be discounted. In tuberculous meningitis and miliary tuberculosis treatment should be vigorous: a dose as high as 2 Gm. per day for four months, or longer if necessary. In tuberculous meningitis results seemingly are better when intramuscular injection is supplemented by intrathecal injection of from 25 to 59 mg. every twenty-four to forty-eight hours for two or three months, or as long as this method of administration is tolerated by the patient.

Since drug fastness is apparently closely related to duration of treatment, regardless of the daily dosage, limitation of the period to a few weeks may be effective in avoiding this phenomenon in many cases.

Other Chemical and Antibiotic Substances

There is no other substance known today which compares with streptomycin in its effectiveness against tuberculosis. The sulfones, promin and promizole, are generally ineffective alone. Experimental work is in process to determine whether or not there is synergistic action when any of these are added to streptomycin. Para-aminosalicylic acid is promising on the basis of laboratory experimentation, but sufficient clinical work has not yet been done to permit evaluation of this drug. Subtilin has not had sufficient clinical trial and there is not yet enough animal experimentation to indicate its usefulness. Of the many other antibiotic substances, none in preliminary experimentation has shown indication of real value against tuberculosis and none has had clinical trial.

SOUTHWESTERN MEDICAL ASSOCIATION

Approximately 310 physicians, primarily from Arizona, New Mexico, and West Texas, registered for the annual meeting of the Southwestern Medical Association in El Paso, October 28-30. A scientific program featured nine guests: Drs. Ralph K. Ghormley, Mayo Clinic, Rochester, Minn. (orthopedic surgery); Hugh Hare, New England Dea-

coness and Baptist Hospitals, Boston (radiology); Peter C. Kronfeld, Illinois Eye and Ear Infirmary, University of Chicago, and Northwestern University, Chicago (ophthalmology); E. D. Plass, University of Iowa, Iowa City (obstetrics and gynecology); Ralph A. Reis, Northwestern University, Chicago (obstetrics and gynecology); Carlton B. Souders, Lahey Clinic, Boston (internal medicine); O. E. Van Alyea, University of Illinois and Northwestern University, Chicago (medicine and otolaryngology); R. J. Whitacre, Huron Road Hospitals, Cleveland (anesthesia); Robert M. Zollinger, Ohio State University, Columbus (surgery).

General assemblies, eye, ear, nose, and throat sessions, question and answer luncheons, technical exhibits, and entertainment were provided. At a luncheon meeting Dr. Joseph M. Greer, Phoenix, Ariz., became president and the following officers were elected: Drs. I. J. Marshall, Roswell, N. Mex., president-elect; W. E. Vandevere, El Paso, first vice-president; Joseph Bank, Phoenix, Ariz., second vice-president; and W. R. Curtis, El Paso, reelected secretary-treasurer. The next meeting place and date was left for decision with the executive committee.

A tea, luncheon and style show, and other social activities were held for women visitors. Mrs. Delphin von Briesen was social chairman for the woman's auxiliary program.

Dr. W. W. Schuessler was general chairman of the association meeting.

TEXAS DERMATOLOGICAL SOCIETY

The Texas Dermatological Society met in Beaumont on October 17. A group of patients was presented in the morning. After luncheon, the cases were discussed. About forty Texas dermatologists were in attendance, and some of them remained for a boat ride the next day with Dr. W. A. Smith, Beaumont, as host.

The next meeting of the society will be held in San Antonio in May in conjunction with the annual session of the State Medical Association.

MARJORIE SHEARON TO BE IN DALLAS

Dr. Marjorie Shearon, Washington, D. C., editor of "American Medicine and the Political Scene" and observer of the Washington scene for fifteen years, will be the speaker for the annual meeting of the Dallas County Medical Society on January 13 in Dallas. Dr. Shearon resigned from government employment to organize the Shearon Medical Legislative Service.

The Dallas society is extending an invitation to physicians from throughout Texas to hear Dr. Shearon. Reservations should be made for the evening dinner meeting through the office of Dallas County Medical Society, 433 Medical Arts Building, Dallas 1.

TEXAS NEUROPSYCHIATRIC ASSOCIATION

Approximately one hundred members and guests were present for the fall meeting of the Texas Neuropsychiatric Association, held October 25 at the Veterans Administration Hospital, Waco. The program was opened by Dr. M. J. Cooper, San Antonio, president; Dr. Walter Ford, Waco, presided during the presentation of scientific papers. The physicians were served lunch in the hospital dining room, and a tour of the hospital was provided.

The scientific program consisted of the following:

Neuropsychiatric Problems in the Veterans Administration—Dr. Oscar Hubbard, Dallas.
Problems in the Waco Veterans Administration Hospital—Dr. T. J. Hardgrove, Waco.
Insulin Tolerance Test and Insulin Shock Therapy—Dr. Louis W. Leskin, Waco.
Accidental Transmission of Infectious Hepatitis through Subinoculation with Malaria: Case Reports—Dr. Walter Ford, Waco.
Clinical Psychology in a Neuropsychiatric Hospital—Ruth M. Hubbard, Ph. D., Waco.
Orientation in Auditory Perception—Dr. Thomas G. Lupo, Waco.
Clinical Conference: Neurologic.
Clinical Conference: Psychiatric.

TEXAS SURGICAL SOCIETY

The fall meeting of the Texas Surgical Society was held in Fort Worth, October 4-5, with the following scientific program:

October 4

Chylous Angioma of Mesentery: Report of Case—Dr. R. W. Crosthwait, Waco.
Lymphosarcoma of Gastro-Intestinal Tract—Drs. Robert M. Moore and A. O. Singleton, Jr. (by invitation), Galveston.
Uncommon Gastric Lesions—Dr. J. P. North, McKinney.
Texas Weather and Water—Dr. Carl Moyer, Dallas.
Gallbladder Diseases: Physiologic and Clinical Aspects—Dr. Andrew B. Small, Dallas.
Surgical Treatment of Carcinoma of Breast—Dr. Everett B. Lewis, Houston.
Experiences in Treatment of Brain Abscess—Dr. S. R. Snodgrass, Galveston.
Ruptured Intervertebral Disk—Dr. Francis Grant, University Hospital, Philadelphia.
Kidney Tumors: Types, Diagnosis, and Treatment—Dr. Harry Spence, Dallas.
Late Metastases from Carcinoma of Kidney—Dr. J. Howard Shane, Dallas.

October 5

Glomus Tumor of Mediastinum—Dr. G. V. Brindley, Jr., Temple.
Choice of Operation for Reconstruction of Esophagus—Dr. Albert W. Harrison, Galveston.
Influence of Contact Compression Factor on Osteogenesis of Surgical Fractures—Dr. G. W. N. Eggers, Galveston.
Injuries of Distal Phalanx of Finger—Dr. R. M. Tenery, Waxahachie.
New Method of Anastomosis: Experimental Study—Drs. T. G. Blocker, Jr., J. H. Hendrix (by invitation), O. E. Hall (by invitation), and George R. Herrmann (by invitation), Galveston.

Entertainment for visiting physicians included a cocktail party and banquet the evening of October 4. "Dutch" Meyer, coach of the Texas Christian University football team, was guest speaker.

Officers elected for the ensuing year are Drs. E. P. Bunkley, Stamford, president; W. Lee Hudson, Dallas, first vice-president; George Enloe, Fort Worth, second vice-president; T. G. Blocker, Jr., Galveston, secretary; C. B. Carter, Dallas, treasurer; and Dudley Jackson, San Antonio, member of the council. The next meeting will be held in Houston, April 5-6, 1949.

Arrangements for the Fort Worth meeting were made by Drs. Jack Furman, George Enloe, Hub E. Isaacks, and Robert Sewell.

COLLEGE OF SURGEONS IN HOUSTON

A sectional meeting of the American College of Surgeons will be held January 14-15 at the Rice Hotel, Houston. The conference is planned for physicians and surgeons and the professional personnel of hospitals. The latest developments in medical science and in hospital service will be presented. The Houston meeting is one of seven planned for various parts of the country during the next several months.

Conferences for the hospital personnel and for medical groups will run concurrently. Part of the sessions will be joint meetings, others separate. Luncheons, a dinner meeting, and a round-table conference, as well as medical motion pictures, will supplement lecture sessions.

HEMATOLOGY COURSE AT BAYLOR

A postgraduate course in hematology, designed primarily for general practitioners, will be offered by the Department of Medicine, Baylor University College of Medicine in Houston, January 3-6. Out-of-town guest speakers who have been announced include Dr. Frank Bethell, University of Michigan, Ann Arbor; Dr. William Marr, University of Texas Medical Branch, Galveston; and Dr. Joseph Hill, Baylor Hospital and Southwestern Medical College, Dallas.

Registration for the course may be made in ad-

vance or on the morning of January 3. The fee is $50. Dr. James A. Greene, professor of medicine at Baylor University College of Medicine, will give additional information upon request.

LIBRARY NOTES

PACKAGE SERVICE

The package library consists of collections of reprints and other periodical material on various subjects, prepared for lending to members of the Association. Requests for packages should be addressed "Library, State Medical Association of Texas, 700 Guadalupe Street, Austin, Texas." Twenty-five cents in stamps should be enclosed with the request to cover postage and part of the expense of collecting the material. Packages are allowed to remain in the hands of the borrower for 14 days.

ACCESSIONS

The following additions were made to the Library during November:

Reprints received, 987.
Journals received, 290.
Books received, 13.

Orthopsychiatry, 1923-1948, by Lowrey (editor), from the American Orthopsychiatric Association, Manaska, Wis.

Hallmarks of Mankind, by Jones, from Williams & Wilkins, Baltimore.

Education for Professional Responsibility, by Smith (editor), from Carnegie Press, Pittsburgh.

New and Nonofficial Remedies, 1948, American Medical Association; *Surgical Treatment of the Abdomen*, by Bancroft and Wade (editors); and *Signs and Symptoms: Their Clinical Interpretation*, by MacBryde (editor), from J. B. Lippincott Company, Philadelphia.

A Doctor Talks to Teen-Agers, by Sadler; *Synopsis of Psychosomatic Diagnosis and Treatment*, by Dunbar; and *Pathology*, by Anderson, from C. V. Mosby Company, St. Louis.

Collected Reprints of the Grantees of the National Foundation for Infantile Paralysis, from the National Foundation for Infantile Paralysis, New York.

Diabetic Manual for the Doctor and the Patient, eighth edition, by Joslin, from Lea & Febiger, Philadelphia.

Clinical Management of Varicose Veins, by Barrow, from Paul B. Hoeber, New York.

A Treatise on Contemporary Religious Jurisprudence, by Rubenstein, from the Waldain Press, Chicago.

SUMMARY OF SERVICE

Local users and visitors, 47.	Borrowers by mail, 53.
Items consulted, 508.	Packages mailed, 58.
Items borrowed, 132.	Items mailed, 546.

Total number of items consulted and loaned, 1,186.

MOTION PICTURE FILM LIBRARY

Motion picture films on medical subjects, 16 mm., both silent and sound, some in color, and suitable for either medical or lay audiences, are available for loan to county medical societies, hospital staffs, or individual physicians, on request. Borrowers will be required to pay only the cost of shipment of the films, by express, with insurance, and for any damage to films while in the hands of the borrower.

Requests for films should be addressed to "Motion Picture Film Library, State Medical Association of Texas, 700 Guadalupe Street, Austin, Texas." A list of available films, with descriptions, will be furnished on request.

The following motion picture films were loaned by the Film Library during November:

Accent on Use (National Foundation for Infantile Paralysis)—University of Houston School of Nursing, Houston.

Anesthesia, Regional (Winthrop Chemical Company) — Wharton - Jackson - Matagorda - Fort Bend Counties Medical Society, Wharton.

Appendicitis in Childhood (Mead Johnson)—Bonham Medical Society, Bonham.

Appraisal of the Newborn (Mead Johnson)—University of Houston School of Nursing, Houston.

As Others See Us (American Hospital Association)—State Tuberculosis School of Nursing, Sanatorium; City - County Hospital Personnel, Fort Worth; and University of Houston School of Nursing, Houston.

Blood Transfusion (British Information Services)—State Tuberculosis School of Nursing, Sanatorium.

Breech Extraction with Forceps (Mead Johnson)—F. A. Orgain Hospital Staff, Bastrop.

Ceasarean Section, Low Cervical (Mead Johnson)—Harris College of Nursing, Fort Worth.

Cervical Smear (Dr. Karl J. Karnaky)—Clay-Montague-Wise Counties Medical Society, Decatur.

Cervical Smear II (Dr. Karl J. Karnaky)—Southern Medical Association, Miami, Fla.

Chest Disease, Surgery in (British Information Services)—State Tuberculosis School of Nursing, Sanatorium.

Choose to Live (U. S. Public Health Service)—St. Joseph's Hospital, Wellington.

Daily Battle (National Foundation for Infantile Paralysis)—Parent Education Club, Pampa.

Edema—Cardiac and Renal (Winthrop Chemical Company)—Brackenridge Hospital School of Nursing, Austin.

Eyes, Your Children's (British Information Services)—Bell County School Children, Temple.

Folvite in Anemia (Lederle Laboratories)—Dr. N. L. Schiller, Austin.

From Moo to You (Borden Company)—Bell County School Children, Temple.

Gastrectomy, Safer (Billy Burke Productions)—Pre-Medical Club, Baylor University, Waco.

Gastroscopy in Gastric Pathology (Harrower Laboratory, Inc.)—Medical Staff, Methodist Hospital, Dallas.

Goiter Surgery (Mead Johnson)—Sigler Clinic, Shamrock.

Goodbye Mr. Germ (Texas Tuberculosis Association)—Bell County School Children, Temple.

Hematology, Animated (Armour and Company)—Dr. N. L. Schiller, Austin.

Hidden Hunger (Swift and Company) — Bell County School Children, Temple.

Hysterectomy (Mead Johnson)—F. A. Orgain Hospital, Bastrop.

Infantile Paralysis, Your Fight Against (National Foundation for Infantile Paralysis)—Rotary Club, Woodville.

Lesions of Vulva, Vagina and Cervix (Dr. Karl J. Karnaky)—Southern Medical Association, Miami, Fla.

Let My People Live (Texas Tuberculosis Association)—Health Group, San Antonio.

Magic Bullets (U. S. Public Health Service)—B'nai B'rith Lodge, Austin.

Mastoid Surgery (Dr. Louis Daily)—State Tuberculosis School of Nursing, Sanatorium.

Meningioma, Removal with Cranioplasty (Dr. George Ehni)—Dr. M. R. Lawler, Mercedes.

New Horizons (National Foundation for Infantile Paralysis)—Rotary Club, Woodville.

Normal Delivery (Mead Johnson) — Methodist Hospital School of Nursing, Houston.

Plain Facts (American Social Hygiene Association)—St. Joseph's Hospital, Wellington.

Poliomyelitis, Sister Kenny Method of Treatment of (Dr. Herbert Hipps)—Parent Education Club, Pampa.

Premature Infant, The Care of (Mead Johnson)—University of Houston School of Nursing, Houston.

Problem Child (Pet Milk Company)—St. Joseph's Hospital, Wellington.

Psychiatry in Action (British Information Services)—U. S. Public Health Service Hospital, Fort Worth.

Resuscitation of the Newborn (Mead Johnson)—Quanah Clinic, Quanah.

Roentgen Pelvimetry (Mead Johnson)—Dr. N. L. Schiller, Austin, and Quanah Clinic, Quanah.

Strabismus Surgery (Dr. Ray K. Daily)—Dr. M. R. Lawler, Mercedes.

Time Is Life (American Cancer Society)—Clay-Montague-Wise Counties Medical Society, Decatur, and American Association of University Women and Students, Kermit.

Traitor Within (American Cancer Society)—American Association of University Women and Students, Kermit.

Tuberculosis, Diagnostic Procedure in (Texas Tuberculosis Association)—Hotel Dieu Hospital School of Nursing, Beaumont.

Tuberculosis, Role of Public Health Nurse in (Texas Tuberculosis Association)—Hotel Dieu Hospital School of Nursing, Beaumont.

Varicose Veins and Their Complications (Becton, Dickinson & Co.)—Pre-Medical Club, Baylor University, Waco.

Varicose Veins, Treatment of (Searle Laboratories)—Brackenridge Nursing School, Austin.

When Bobby Goes to School (Mead Johnson)—Parent-Teachers Association, Kaufman.

BOOK REVIEWS

[1] **Oral Vaccines and Immunization by Other Unusual Routes.** By David Thomson, Director of the Pickett-Thomson Research Laboratory; Robert Thomson, Pathologist, St. Paul's Hospital, London; and James Todd Morrison, M.D., D.P.H. Cloth, 329 pages. Price, $11. Baltimore, Williams and Wilkins Company, 1948.

This book is massive in size (the pages are 8.5 by 11 inches) and in context. Completed by three London workers in 1936, it was not published until 1947 because of the war. Much additional literature on unusual routes of vaccination is included from that eleven-year period. Over a thousand papers on oral, intranasal, intratracheal, and conjunctival vaccinations are covered, as well as numerous contributions on vaccination by inunction. The use of oral typhoid vaccines, especially in European miners, is particularly interesting. Several conclusions in regard to unusual routes of vaccination are voiced: (1) it takes from 40 to 100 times the usual parenteral dose, (2) vaccination must be repeated frequently, and (3) reactions are uncommon.

The reader, however, will probably do some concluding for himself and agree that vaccination by unusual routes is best reserved for unusual situations. The certainty of dosage and absorption, as well as the relative permanence of results in parenteral vaccination far outweigh the mere convenience of administration claimed for enteric and other unusual routes. In fact, even this convenience is probably more theoretic than real, especially in the case of inunction, or when intratracheal and conjunctival routes are used.

The volume is a medical curiosity and presents much challenging material from the vocal minority of present day immunologic thinkers.

[2] **Treatment of Heart Disease.** By William A. Brams, M.S., M.D., Ph.D., Associate Professor of Medicine, Northwestern University Medical School. Cloth, 195 pages. Price, $3.50. Philadelphia and London, W. B. Saunders Company, 1948.

This guide in the treatment of heart disease for the general practitioner fulfills its purpose of conciseness and practicability. Based exclusively upon the author's experience, the book is dogmatic and conservative to a fault. Systematic coherent arrangement of the material makes it a readable ready reference.

The first chapter on the pharmacologic action of drugs used in the treatment of heart disease is excellent. Management of congestive failure is well emphasized, and standard treatments for all recognized types of heart conditions are included, as well as two excellent final chapters on the management of heart disease in pregnancy and in surgery respectively.

The author's exclusive preoccupation with the galenical preparations of digitalis, although justified for emphasis, is not timely; at least the purported advantages of the much-talked-of glucosides might have been included. The endorsement of strophanthin K fails to make note of this preparation's loss of potency with age. The recommended bed rest regimen in congestive failure and coronary occlusion is too inflexible, and the blanket roll under the knees antedates respect for phlebothrombosis. The suggestion of administering sodium bicarbonate with the salicylates is more customary than scientific.

This little book evades no question. On page 19 is found the answer to the question of prophylactic use of digitalis in that "digitalis acts on the failure, not the underlying disease" of the heart.

[3] **British Surgical Practice.** Volume II. By Sir Ernest Rock Garling, F.R.C.S., F.R.C.P., Consulting Surgeon, Westminster Hospital, and J. Paterson Ross, M.S., F.R.C.S., Surgeon and Director of Surgical Clinical Unit, St. Bartholomew's Hospital, and Professor of Surgery, University of London. Cloth, 540 pages, illustrated. Price, $15. St. Louis, C. V. Mosby Company, 1948.

This is the second volume of an interesting addition to the field of encyclopedic reference works. It seems to be entirely adequate from the standpoint of completeness of subject matter. The discussions leave little or nothing to be desired in the way of thoroughness of presentation. In comparison with the American Encyclopedia, the discussions seem to be more academic and written with more effort to present impartially all existing views with less emphasis on any one or two practical approaches which may be preferred by the authors. Because of the universality of scientific expression, the reader is not troubled by British language idioms or colloquialisms. There are interesting differences of methods and procedure which are found occasionally.

The format in general appears somewhat cramped. This is offset, however, by the use of marginal subhead notations which make possible instant reference to any particular subdivision of the subject matter.

This is certainly a worth-while addition to any reference library.

[4] **The Lung.** By William Snow Miller, Late Emeritus Professor of Anatomy, University of Wisconsin. Second Edition. Cloth, 222 pages. Price, $7.50. Springfield, Ill., Charles C. Thomas, 1947.

It is not a difficult task to review such a book as this. The written word and the illustrations are so clear as to leave no doubt but that Dr. Miller has given the true structure of the lung. The special beauty of the work lies in the fact that the organ can be pictured in three dimensions. Its trachea, bronchi, bronchioli, air spaces, blood vessels, lymphatics, lymphoid tissue, nerves, and the pleura are displayed as only an expert can display them.

Perhaps in this day of advanced chest surgery, with its requirement for a knowledge of surgical anatomy, the only shortcoming the book possesses is

[1] Reviewed by J. J. Andujar, M.D., Fort Worth.
[2] Reviewed by Victor E. Schulze, M.D., San Angelo.
[3] W. D. Morris, M.D., Fort Worth.
[4] Sim Hulsey, M.D., Fort Worth.

a lack of mentioning the anatomic relationships of the lungs. However, to the microscopist and to many others, this book is authority and a classic, and it will remain so.

[5] **Pioneer Life in Kentucky, 1785-1800.** By Daniel Drake, M.D. Cloth, 257 pages. Price, $4. New York, Henry Schuman, 1948.

This little book, as the title implies, is an account of the pioneer days in Kentucky and written as a series of ten letters from Dr. Daniel Drake to his children. Each letter is written in a different style. As a group, they portray the pioneer spirit of a physician, who, with his family, overcame many obstacles in that period of history and helped to establish the cherished ideals of Americanism.

The laity and the profession alike can derive much profitable and pleasant reading from these manuscripts.

[5] Reviewed by William H. Teague, M.D., Plainview.

NEWS

Contributions to this department will be appreciated. News should be of general medical interest, such as public health activities, new hospitals, personal items of more than local value, etc. News for a particular number of the JOURNAL should be in the hands of the Editor not later than the fifteenth of the preceding month.

The American College of Surgeons at its annual meeting in Los Angeles in October elected Dr. Robert M. Moore, professor of surgery at the University of Texas Medical Branch, Galveston, as second vice-president for the 1949-1950 term, and Dr. Curtice Rosser, Dallas, was elected to the board of governors for the term ending in 1951. Seven honorary fellowships and 943 fellowships, the largest number awarded in any one year since 1914, were conferred.

Texas physicians who became fellows in the 1948 class of initiates are as follows: Drs. William A. Altman, Dallas; Henry H. Beckering, Dallas; Clement C. Boehler, El Paso; F. Keith Bradford, Houston; H. Kermit Brask, San Angelo; George V. Brindley, Jr., Temple; Edwin A. Chandler, Houston; J. Alston Clapp, Jr., Houston; J. Robert Cochran, Fort Worth; William A. Collins, Jr., El Paso; Dolphus Compere, Fort Worth; Herschel F. Connally, Jr., Waco; R. Wilson Crosthwait, Waco; Howard K. Crutcher, Dallas; John J. de Leon, San Antonio; Marvin E. Fatter, Austin; Fred E. Felder, Palestine; Herman L. Gardner, Houston; John W. Garnett, Jr., Fort Worth; John V. Goode, Dallas; S. Baron Hardy, Houston; Albert W. Harrison, Galveston; Elliott B. Hay, Houston; John P. Heaney, Houston; Maurice D. Heatly, San Marcos; Francis B. Kelly, Corpus Christi; Alfred F. Knoll, Houston; Charles F. Mares, Galveston; Frank O. McGehee, Houston; Cornelius Olcott, Jr., Harlingen; Robert L. Sewell, Fort Worth; Thomas P. Shearer, Houston; Mat F. Strashun, Houston; Revace O. Swearingen, Austin; Kenneth C. von Pohle, Houston; and Raleigh R. White, Temple.

The Rocky Mountain Cancer Conference held in Denver last July is featured in the November issue of the *Rocky Mountain Medical Journal.* Papers presented at the second annual conference by seventeen of the nation's foremost authorities on cancer have been published together in the *Journal.* The conference was sponsored by the Colorado State Medical Society, the Colorado division of the American Cancer Society, and the Rocky Mountain Cancer Foundation. The *Rocky Mountain Medical Journal* is sponsored by the state medical societies of Colorado, Wyoming, New Mexico, Utah, and Montana, members of which will receive copies. Several thousand additional copies are available to meet requests from outside those states.

Hospital Activity aimed at providing better service is being reported throughout the state. Among the many efforts which are being made to obtain good hospital facilities are the following, which received newspaper notices coming to the attention of the Editor:

In Garrison, Nacogdoches County, townspeople had a celebration November 15 to mark the opening of a seventeen bed hospital built with funds donated by citizens of the community, reports the Tyler *Telegraph.* The hospital has been leased by Dr. E. S. Rogers, formerly of Minden, La., and will be operated for the benefit of Garrison and the surrounding area.

The Hamilton Sanitarium, Hamilton, which had been closed some weeks ago, was scheduled to reopen about December 1 under the management of Dr. Herbert Nassour, Jr., and Dr. Prevost Hubbard, Jr., who were doing work at St. Paul's Hospital, Dallas, when they leased the Hamilton property, according to the Hamilton *Herald-Record.*

Civic leaders in Garland, headed by the Rotary Club, are taking steps toward a campaign to raise funds for a community hospital, the Dallas *News* informs. Tentative plans call for a twenty-five bed hospital.

Donations are continuing to come in for the Flow Memorial Hospital, Denton, states the Denton *Record-Chronicle.* Hospital authorities hope to receive a total of $60,000 through personal subscription for furnishing the hospital and expect to receive a grant from the federal government to match half of the money raised locally.

A group of urologists are sponsoring the inclusion of a sixty bed urologic unit in the proposed St. Luke's Episcopal Hospital to be a part of the Texas Medical Center, Houston. Drs. B. Weems Turner, J. Reese Blundell, Thomas H. Guthrie, Jr., and Ross D. Margraves are officers of a committee of urologists who have been considering for several years the establishment of a teaching and research hospital for urology, informs the Houston *Chronicle.* The proposal by this group that the urologic unit be included in plans for St. Luke's Hospital was favorably received by the trustees of the hospital.

In Dallas a number of activities designed to increase the availability of good hospital care are under way, according to the Dallas *News* and *Times-Herald.* A campaign is under way to raise $1,250,000 to be added to $450,000 already on hand for erection of a new wing at St. Paul's Hospital. The proposed five floor addition would provide for 150 beds. Dallas citizens are also being asked to vote a bond issue to expand Parkland Hospital and provide for a new Memorial Hospital. Meanwhile, an expanded program for Baylor University Hospital has been approved by the board of trustees. Lawrence Payne, formerly hospital administrator, has been named to the new post of director with responsibilities for personnel and public relations; Boone Powell, formerly Mr. Payne's assistant, has been made administrator and will devote his full attention to internal hospital operation; and a firm of technical assistants to set up new and better procedures in the hospital has been retained.

The Society for Experimental Biology and Medicine, Southwestern Section, and the Southwestern Association for Cancer Research held meetings at the Air University School of Aviation Medicine, Randolph Field, on November 5 and 6. Approximately seventy-five Texas, Oklahoma, Arkansas, and Louisiana physicians and related scientists discussed the latest research and plans for future investigations. Dr. R. H. Rigdon, professor of pathology at the University of Texas Medical Branch, is chairman of the biology and medicine section. Dr. Jacob Furth, Dallas, is president and W. A. Selle, Ph. D.,

University of Texas Medical Branch, Galveston, is secretary of the cancer association, which has just been organized.

Houston Alumni of the University of Texas Medical Branch have recently reorganized, according to the Houston *Post*. Approximately 280 physicians in Houston are eligible for membership in the organization, which was disbanded during the war. A meeting November 12 featured an address by Dr. G. V. Brindley, Temple, President-Elect of the State Medical Association, and talks by several professors from the Medical Branch. Arrangements were under the direction of Dr. Charles D. Reece, Houston, vice-president of the state alumni association.

The University of Texas Medical Branch, Galveston, has announced the appointment of W. W. Nowinski, Ph. D., as associate professor of neurochemistry. Dr. Nowinski has been conducting research on enzyme factors in brain metabolism in the Tissue Culture Laboratory at the Medical Branch.

Dr. Francis C. Grant, professor of neurosurgery at the University of Pennsylvania Medical School, Philadelphia, gave the James Greenwood Lecture in Neurology and Neurosurgery at the Medical Branch on December 6.

Wendell Gingrich, F.C.D., professor of parasitology at the Medical Branch, has been elected president of the National Malaria Society.

Dr. Charles A. Hooks, assistant professor of urological surgery at the Medical Branch, presented a report on the clinical aspects of intersexuality at the South-Central Section meeting of the American Urological Association in St. Louis in October, states the Galveston *Tribune*.

Dr. Wendell Griffith, professor of biochemisry and nutrition at the Medical Branch, has been appointed chairman of a special panel on nutrition for the nationwide tumor growth committee of the National Research Council, reports the Galveston *News*.

Dr. Morris Pollard, associate professor of preventive medicine and director of virus research at the Medical Branch, has been named as civilian consultant to the Fourth Army Area Medical Laboratory, Brooke Army Medical Center, informs the San Antonio *News*.

Baylor University College of Medicine, Houston, has recently obtained three grants for the current academic year, Dr. Walter H. Moursund, dean of the college, has announced. The grants are as follows: Bilhuber-Knoll Corporation, $2,250 for studying cardiovascular effects on some aliphatic amines; Lakeside Laboratories, $500 plus equipment valued at $1,500 for studying the fundamental mechanisms involved in mercurial diuresis; and United States Public Health Service, $8,650 for studying kidney function.

Affiliation of Jefferson Davis Hospital, Houston, with Baylor University College of Medicine has been announced through the Houston *Chronicle*. Dr. M. E. DeBakey, professor of surgery, and Dr. James A. Greene, professor of medicine, will become chief of surgery and of medicine respectively under the new arrangement. Faculty members will take an active part in the hospital routine and upper class medical students will assist under their direction, a program designed to give patients better care and to give students valuable training.

Personals

Dr. Austin E. Hill, health director for San Antonio; *Dr. A. T. Ritch*, director of the State Health Department Laboratory in San Antonio; *Dr. J. V. Irons*, director of the State Laboratory in Austin; and *Dr. Joseph M. Murphy*, assistant director of the State Laboratory in Austin, presented a paper on "Q Fever Survey in the Southwest" at the annual meeting of the American Public Health Association in Boston in November, reports the San Antonio *Light*.

Dr. R. H. Bell, Palestine, presented a paper on "The Use of Wire Sutures in Compound Wounds" at the Southern Medical Association meeting in Miami, the latter part of October, reports the Palestine *Herald-Press*.

Dr. Melvin W. Thorner, San Antonio, is author of a new textbook "Psychiatry in General Practice," which has recently been published by the W. B. Saunders Company, states the San Antonio *Light*.

Dr. F. Keith Bradford, Houston, was elected vice-president of the American Academy of Neurological Surgery at its September meeting in Montreal, informs *Medical Record and Annals*.

Dr. William F. Mengert, Dallas, has been appointed to the forty-member advisory committee to the U. S. Children's Bureau on federal-state programs for maternal and child health and crippled children's services.

Births

To *Dr. and Mrs. D. W. Brown*, Fredericksburg, a son, Richard Hockaday, on October 21.

To *Dr. and Mrs. J. M. Garrett*, Waco, a son, Michael Scott, October 1.

To *Dr. and Mrs. W. L. Ford*, Waco, a daughter, Geraldine, September 4.

SOCIETY NEWS

Bell County Society

October 6, 1948

(Reported by J. G. Rodarte, Secretary)

Clinical Study of Use of Synthetic Detergent, PHisoderm Combined with Hexachlorophene for Disinfection of Skin (Preliminary Report)—Thomas K. Young, Jr., and Bromley S. Freeman, Temple.

Status of Allergy in Relation to Medical Practice—A. Ford Wolf, Temple.

The scientific program outlined was presented October 6 when fifty-two members and guests of Bell County Medical Society met in Temple. A request from the Woman's Auxiliary for financial assistance in bringing a speaker on socialized medicine to its November 12 meeting was received.

Brazoria County Society

October 28, 1948

(Reported by A. O. McCary, Secretary)

Mortality in Gallbladder Diseases—Herbert Poyner, Houston.

All members of Brazoria County Medical Society except three and their wives attended the October 28 meeting of the society in West Columbia. Herbert Poyner, Houston, read the paper named, assisted by Jack H. Mayfield, Houston. A general discussion followed the paper.

The president appointed a committee to nominate officers for 1949. Herbert Merz, Alvin, was named chairman, and other members were Joe S. Montgomery, Angleton; John M. Laughlin, Sweeney; Ralph E. Gray, Lake Jackson; and W. D. Nicholson, Freeport.

Upon motion by Granville J. Hayes, Alvin, the society voted to send a letter of thanks to the commissioners' court in appreciation of its cooperation in obtaining a director for the county health unit.

It was tentatively decided to invite members of the Wharton-Jackson-Matagorda-Fort Bend Counties Medical Society to attend the February meeting.

Brown-Comanche-Mills-San Saba Counties Society

October 11, 1948

Treatment of Congestive Heart Failure—Frank Bynum, Fort Worth.

Bronchial Asthma—Will S. Horn, Fort Worth.

Two guests from Fort Worth, Frank Bynum and Will S. Horn, presented the program for the October 11 meeting of Brown - Comanche - Mills - San Saba Counties Medical Society in Brownwood. Five other guests were present.

Cameron-Willacy Counties Society

October 18, 1948

Activities of the National Physicians Committee—C. G. Brindley, Kingsville.
Conditions under Socialized Medicine in England—Boyd Stewart, Kingsville.

A discussion of the National Physicians Committee and of socialized medicine in England made up the October 18 program of the Cameron-Willacy Counties Medical Society, held in Harlingen. L. P. Noell, Jr., president of Kleberg-Kenedy Counties Medical Society, accompanied the two speakers from Kingsville.

Cherokee County Society

October, 1948

Seven doctors were named by the Cherokee County Medical Society, meeting in Jacksonville early in October, to serve on the medical advisory staff of the Cherokee County Tuberculosis Association. Those appointed include J. T. Boyd and George M. Hilliard, Jacksonville; Kay B. Urban, M. J. Kuykendall, and T. H. Cobble, Rusk; J. L. DuBose, Wells; and W. A. McDonald, Alto.

Dallas County Society

October 14, 1948

(Reported by W. W. Fowler, Secretary)

Symposium on the Handicapped Child:
Speech Correction and Reeducation—Robert E. Card, Ph.D., Parker Foundation, Dallas.
Psychology of the Handicapped Child—Don P. Morris, Dallas.
Cerebral Palsy and Other Orthopedic Conditions—Margaret Watkins, Dallas.

Dallas County Medical Society conducted a symposium on the handicapped child at its meeting October 14 with the persons named above participating.

The society unanimously adopted resolutions on the death of Dr. Marvin P. Stone, Dallas, read by Everett Fox.

R. N. Harger, Ph.D., professor of biochemistry and toxicology, Indiana University School of Medicine, Indianapolis, was a special guest at the meeting.

October 29, 1948

(Reported by W. W. Fowler, Secretary)

Diseases of the Common Duct—W. E. Burnett, Temple University, Philadelphia.

Dallas County Medical Society met jointly with the Dallas Southern Clinical Society on October 29 in Dallas. W. E. Burnett, professor of surgery at Temple University, Philadelphia, was presented in an address by the Dallas Southern Clinical Society. No business was transacted.

November 11, 1948

(Reported by W. W. Fowler, Secretary)

Special Medico-Legal Discussion—C. C. Nash, Dallas.
Pneumoperitoneum in Diagnosis of Pelvic Conditions—J. R. Maxfield, Jr., Dallas.

The program outlined was carried out at the November 11 meeting of Dallas County Medical Society in Dallas. Upon motion by Frank Kidd, the society voted to request the president to appoint a committee to study the possibility of organizing a Dallas County Medical Residents Society, the members to be residents serving in the various hospitals of the county, meetings to be held regularly, the purpose being to give members an opportunity to prepare and present scientific papers and develop other educational activities under the direction of the county medical society.

Grayson County Society

October 26, 1948

Medical Aspects of Atomic Explosions—Col. John Talbot, Director, Department of Biophysics, School of Aviation Medicine, Randolph Field.

The professional staff of Perrin Station Hospital was host October 26 to the Grayson County Medical Society for a tour of the hospital, dinner, and a program arranged by the hospital staff. Lt. Col. Anthony Czerwinski, base surgeon, welcomed the guests and introduced Col. Chester P. Gilger, base commander. Responses were given by Don W. Freeman, Sherman, president of the medical society; W. Doak Blassingame, Denison; and John W. Ellis, Sherman.

Highlighting the evening program was an address by Col. John Talbot, Randolph Field, on the medical aspects of atomic explosions. His address was supplemented by motion pictures, slides, and charts on atomic explosions and the resulting effects on human beings. Colonel Talbot stated that prevention and not treatment is the best policy with respect to atomic explosions. He said distance from the explosion is the best measure and pointed out fatalities can be caused by flash burns, radiation sickness, concussion, and injuries from flying debris. Statistics reveal that 65 per cent of all casualties from atomic explosion have resulted from causes other than radiation.

Harris County Society

October 20, 1948

Socialized Medicine—E. H. Cary, Dallas.
History of Harris County Medical Society—J. Edward Hodges, Houston.

The necessity for continuing the fight against socialized medicine was emphasized by E. H. Cary, Dallas, in a talk before Harris County Medical Society in Houston on October 20. Dr. Cary was introduced to about 250 members of the society by John T. Moore. J. Edward Hodges, Houston, read a history of the Harris County Medical Society, telling how activities began in Houston as early as 1838, two years after the city was founded.

Lubbock-Crosby Counties Society

November 2, 1948

(Reported by Roy G. Loveless, Secretary)

Recent Advances in Treatment of Tuberculosis—Elliott Mendenhall, Dallas.

Forty members and guests of Lubbock-Crosby Counties Medical Society met in Lubbock on November 2 to hear a discussion of tuberculosis by Elliott Mendenhall, Dallas. Dr. Mendenhall gave a brief history of tuberculosis treatment during the past 300 years and discussed individually the various modern methods of treatment. He emphasized the importance of the traditional regime of rest and quiet while pointing out the advantages of using new methods as supplementary treatment. He also stressed the necessity of properly caring for many patients in the home until adequate hospital facilities are available.

The local health situation was discussed at great length. J. T. Hall, Lubbock, gave a report from the publicity committee on arrangements for speakers for service clubs and P.T.A. organizations during the next month or so to further public interest in health. Upon motion, the society decided to incorporate in the recommendations to city-county authorities adopted in September the following: "that a city-county health council be selected to advise with the city-county constituted authorities to be composed of a cross section of the citizenship of Lubbock County."

It was voted to assess each member of the society

$50 for 1949 to cover local dues and increased dues for membership in the State Medical Association.

The society decided to devote the December meeting to its annual banquet with wives of the members as guests. The president appointed an arrangements committee composed of M. H. Benson, chairman; O. W. English, and O. R. Hand.

A nominating committee was also appointed with the following membership: Frank B. Malone, chairman; A. G. Barsh; and James G. Morris.

Randall-Deaf Smith-Parmer-Castro-Oldham Counties Society

October 13, 1948

(Reported by M. W. Nobles, Secretary)

Abdominal Incision and Suture Material—John F. Coneway, Clovis, N. Mex.

Randall-Deaf Smith-Parmer-Castro-Oldham Counties Medical Society met October 13 at the home of Robert C. Stokes, Friona, to hear a talk by John F. Coneway, Clovis, N. Mex.

Oscar H. Loyd, Vega, spoke briefly on a pamphlet published by the National Physicians Committee. He requested members of the society to write to the committee to secure pamphlets for distribution.

The society passed a motion made by Robert A. Neblett, Canyon, seconded by Elmo D. Anderson, Friona, to draw up a resolution indicating that the Dimmitt Hospital is an ethical institution staffed by ethical physicians and asking that the American Medical Association approve the hospital.

November 3, 1948

(Reported by M. W. Nobles, Secretary)

Disease of Biliary System—Carl Moyer, Dallas.

A talk by a visitor from Dallas, Carl Moyer, was presented at the November 3 meeting of Randall-Deaf Smith-Parmer-Castro-Oldham Counties Medical Society at Dimmitt. Nine members, two prospective members, and four guests other than Dr. Moyer were present. Refreshments were served.

Reeves-Ward-Winkler-Loving-Culberson-Hudspeth Counties Society

November 18, 1948

(Reported by C. A. Robinson, Secretary)

Practical Significance of Positive Tuberculin Test—W. D. Anderson, San Angelo.

Hypertensive Changes of Ocular Fundus—Henry N. Ricci, San Angelo.

Reeves-Ward-Winkler-Loving-Culberson-Hudspeth Counties Medical Society met November 18 in Monahans. Following dinner, the scientific program outlined was carried out.

Tarrant County Society

November 2, 1948

(Reported by W. P. Higgins, Jr., Secretary)

Physiology and Chemistry of Male Hormone and Its Clinical Usage in the Pre-Adolescent—William R. Leon, Fort Worth.

Uses of Male Sex Hormone in Postpubertal Period—L. N. Gilliland, Fort Worth.

Prolapse of Rectum—T. H. Thomason, Fort Worth.

The scientific program outlined was presented at the November 2 meeting of Tarrant County Medical Society in Fort Worth. Eighty-seven members and two visitors were present.

After discussion, the society adopted an amendment to the by-laws providing that annual dues shall be $50 for regular members; $43 for junior members; and $4 for intern and resident members.

Allen A. Gentling was elected to membership upon application.

Tribute was paid Dr. J. Foster Shelley, father of Harold J. Shelley, who died October 22.

Announcements were made concerning the Tarrant County Society for Mental Hygiene, Fort Worth Eye, Ear, Nose, and Throat Society, and Thirteenth District Medical Society.

Taylor-Jones Counties Medical Society

November 9, 1948

(Reported by L. J. Webster, Secretary)

Taylor-Jones Counties Medical Society elected officers for 1949 when it met November 9 in Abilene. Those chosen are as follows: Virginia Boyd, president; L. J. Webster, vice-president; H. H. Hamilton, secretary; R. W. Varner, delegate; Edwin E. Middleton, alternate delegate; L. F. Johnson, J. N. Burditt, and Donald McDonald, censors. All of the officers reside in Abilene.

Tom Green Eight County Society

October 4, 1948

(Reported by Carl A. Kunath, Secretary)

Headaches—Their Cause and Treatment—Will S. Horn, Fort Worth.

Tumors of the Jaws—Lloyd Richardson, D.D.S., Fort Worth.

Thirty-five members and a number of dentists were present for the October 4 meeting of Tom Green Eight County Medical Society in San Angelo. Two guests from Fort Worth appeared on the program. Will S. Horn, discussing headaches, divided the problem into headaches arising from stimulation of intracranial structures and those arising from stimulation of extracranial structures. He went into the mechanism of migraine headaches, the role of histamine, the importance of psychogenic factors, and various forms of treatment. Lloyd Richardson showed a number of roentgenograms of various types of cysts and tumors of dental origin.

Victor E. Schulze, San Angelo, presented a revised form of the proposed new constitution and by-laws and recommended that they not be adopted until the new year. He suggested that meantime an attorney be engaged and the society be incorporated. The matter was discussed but action was tabled until the next meeting.

A nominating committee consisting of R. E. Windham, chairman; J. A. Bunyard, F. T. McIntire, W. D. Anderson, and Jerome Smith was appointed. A medical advisory committee to work with the social service agencies of San Angelo was appointed with M. D. Knight as chairman, and George L. Nesrsta and H. E. Hickman as members.

Dr. McIntire, reporting for the hospital committee, stated that another meeting had been held since the last report and that ways and means for raising money for an addition to St. John's Hospital were being considered.

Harvey Williams, chairman of the public relations committee, reported that his committee was considering a series of radio broadcasts on medical subjects and hoped to establish better relations with the local newspapers.

A number of communications were brought to the society, including one concerning the proposed establishment of a telephone answering service.

Webb-Zapata-Jim Hogg Counties Society

November 2, 1948

(Reported by M. Valls, Secretary)

Webb-Zapata-Jim Hogg Counties Medical Society met in Laredo on November 2 with V. L. Puig, president, presiding. The society went on record unanimously as approving and endorsing the Laredo-Webb County Health Unit. M. L. Fuller, new director of the unit, was elected to membership upon transfer. A letter from Harold M. Williams, Austin, Secretary of the State Medical Association, urged prompt payment of 1949 dues.

Fourteenth District Society

January 11, 1949

(Reported by John S. Bagwell, Secretary)

The next meeting of the Fourteenth District Medical Society has been scheduled for January 11 at the Waxahachie Country Club. The January date

has been chosen in accordance with a decision made at the last semi-annual meeting to transfer the winter session from December in the hope that there will be less conflict with other programs.

Among the topics to be presented by essayists are the following: "Management of Diabetes Mellitus," "Diarrhea in Infants," "Why Use a Sigmoidoscope?" "Breast Lesions," "Medical Management of Bronchiectasis," "Practical Approach to the Sterility Problem," "Allergy in General Practice," and "Postpartum Hemorrhage." Following a luncheon at 12:30 p. m., a question and answer period with audience participation will be held.

AUXILIARY NOTES

Officers of the Woman's Auxiliary to the State Medical Association of Texas: President, Mrs. S. M. Hill, Dallas; President-Elect, Mrs. Joseph B. Foster, Houston; First Vice-President (Organization), Mrs. O. W. Robinson, Paris; Second Vice-President (Physical Examination), Mrs. Robert F. Thompson, El Paso; Third Vice-President (Hygeia), Mrs. J. C. Terrell, Stephenville; Fourth Vice-President (Program), Mrs. Edward W. Coyle, San Antonio; Corresponding Secretary, Mrs. Cecil O. Patterson, Dallas; Recording Secretary, Mrs. R. E. Clark, Memphis; Treasurer, Mrs. V. M. Longmire, Temple; Publicity Secretary, Mrs. H. S. Renshaw, Fort Worth; Parliamentarian, Mrs. J. C. Sharp, Corpus Christi.

AUXILIARY NEWS

Bell County Auxiliary presented Dr. Merton M. Minter, San Antonio, as speaker for a meeting November 12 in Temple to which presidents and other officers of Temple women's clubs were invited. Approximately three hundred heard Dr. Minter's address on "The American Way of Life," in which he discussed compulsory health insurance and the proposed minimum standards bill. Dr. Minter was introduced by Mrs. F. Paul Burow, Killeen, and Mrs. H. B. Anderson, Temple, presided. Mrs. John R. Winston, Temple, greeted guests at the door.

Following the talk, refreshments were served, with Mesdames Anderson and V. M. Longmire presiding at the coffee and tea services. Hostesses were Mesdames Winston, chairman; Joe Greenwood, H. B. Macey, Raleigh White, Burow, W. N. Powell, T. M. Neal, J. W. Pittman, W. O. Arnold, and R. K. Harlan.

Bexar County Auxiliary held a community service program November 12 in San Antonio to which members of the dental auxiliary and representative women of other civic and federated clubs throughout the city were invited. Dr. Joseph Kopecky, guest speaker from the medical society, spoke on "Be Careful, It's Your Heart."

Refreshments were served with Mesdames Dan Russell and Tom Sharp, past presidents, presiding at the coffee table. Receiving the guests were Mesdames B. H. Passmore, president; Roy Giles, Herbert Hill, J. B. Copeland, Sam Taylor, Alfred Breuer, and M. A. Ramsdell. Hostesses were Mesdames August Herff, Willis Allin, and J. P. Aderhold.—Mrs. C. C. Shotts.

Cass-Marion-Morris-Titus Counties Auxiliary was organized by consolidation of three auxiliaries November 4, when the combined group met for the first time at the home of Mrs. William A. Taylor, Mt. Pleasant. A business meeting was held and the program of activities for the year was planned.—Mrs. E. L. Fender, Secretary.

Dallas County Auxiliary heard a talk on "Medical Legislation" by Philip R. Overton, Austin, general attorney for the State Medical Association, at a luncheon meeting October 27 in Dallas. Mrs. George A. Schenewerk, legislative chairman, presented the speaker. Mrs. A. B. Pumphrey, Fort Worth, state legislative chairman, was a special guest. The tables were decorated by Mrs. O. Rene Caillet.

The affiliation of sixteen new members during November was announced by Mrs. Charles N. Ladue, membership chairman.—Mrs. H. B. Sowers.

Eastland-Callahan Counties Auxiliary met with the medical society for dinner in Eastland on October 19. Mrs. E. R. Townsend, president, was hostess to the auxiliary members, who adjourned after dinner to her home for a business session. This meeting was followed by a social hour at which the doctors were again present. Officers were elected by the auxiliary. Mrs. P. M. Kuykendall, Ranger, was named president, and Mrs. Ervin E. Addy, Cisco, was named secretary.

Erath - Hood - Somervell and Hamilton Counties Auxiliary met November 3 in the home of Mrs. Homer Hedges, Hico. Nine women were present and discussed a variety of topics. Mrs. J. C. Terrell, Stephenville, chairman of Hygeia, reported on the meeting of the State Executive Board in Dallas. Subscriptions to *Hygeia* were received; the magazine will be sent to the public schools of the area.—Mrs. Carl A. Jordan.

Galveston County Auxiliary had a luncheon meeting October 19 in Galveston, at which new members were welcomed. The hostess committee, headed by Mrs. Arild Hansen, introduced the new members, who were welcomed by the president, Mrs. M. L. Towler. Reports were given by officers and chairmen of standing committees. Mrs. R. H. Rigdon spoke to the group in regard to the anti-tuberculosis mass survey; Mrs. E. L. Porter talked on the Southern Town Hall series; and Mrs. Harold B. Griffin explained the mass man and woman power survey being made for the Galveston Volunteer Service Bureau.

Decorations indicative of autumn were arranged by Mrs. Charles Lankford. Gifts given through the courtesy of Nathan's were at each place setting.

Grayson County Auxiliary entertained members of the medical society at a dinner in Denison on November 12. Dr. George A. Schenewerk, Dallas, chairman of the Committee on Public Relations of the State Medical Association, was the speaker, choosing as his subject, "Socialized Medicine." Mrs. John Moore Hardy, Sherman, president, presided. Mrs. John Gleckler, Denison, introduced the speaker. Mesdames F. F. Fowler, D. K. Jamison, R. W. Duncan, and Stanley Monroe were in charge of arrangements. Fifty doctors and their wives were present.

Harris County Auxiliary met October 29 at the Junior League Luncheon and style show in Houston with Mesdames H. Julian Frachtman, Laurence T. Pulliam, and Allen K. Dunkerly in charge. Approximately two hundred members were present, and the following members served as models: Mesdames Thomas Kennerly, Everett R. Seale, Dunkerly, N. W. Kilgore, Clyde M. Warner, Thomas W. Burke, Harry B. Burr, F. Scott Glover, Granville Q. Adams, Pulliam, and Jack G. Brannon.

Harris County Auxiliary sponsored a public program in Houston on November 8 with three speakers on health subjects. Dr. Frederick C. Elliott, dean of the University of Texas School of Dentistry, spoke on "Dental Hygiene"; Dr. Hardy W. Kemp, professor of public health and preventive medicine at Baylor University College of Medicine, spoke on "Public Health"; and Dr. James A. Greene, professor of medicine at Baylor, spoke on "Use of Modern Drugs."

Members of the board of the Woman's Auxiliary to the South Texas District Medical Society were guests for the meeting and for a luncheon preceding it.

The health committee, of which Mrs. Charles B. Saunders is chairman, was in charge of the meeting.

Mrs. S. M. Hill, Dallas, President of the State Auxiliary, spoke on "Our State Work" at a luncheon meeting of Harris County Medical Society in Houston on November 29. Mrs. Hill was introduced by Mrs. Joe B. Foster, Houston, President-Elect of the State Auxiliary. Music was arranged by Mrs. Walter Jenkins. The committee in charge consisted of Mesdames Shaw McDaniel, Thomas D. Cronin, and V. C. Baird.—Mrs. Thomas L. Royce.

Hays-Blanco Counties Auxiliary presented Mrs. Sherwood Avery, San Antonio, in a book review at San Marcos on October 21. Mrs. Avery reviewed Graham Green's "The Heart of the Matter." Funds raised through the program were donated to the Hays County Soldiers and Sailors Memorial Hospital.

Jefferson County Auxiliary honored its past presidents at a luncheon meeting October 6 in Port Arthur. The honored guests were Mesdames J. M. Gober, J. D. Blevins, D. A. Mann, C. M. White, E. C. Ferguson, H. E. Alexander, John Carter, and Fred Sutton, all of Beaumont, and Mesdames A. R. Autrey and J. M. White, Port Arthur. Mrs. F. Peel Allison, Beaumont, welcomed the guests, and Mrs. Sutton made the response.

Mrs. B. J. Fett, Port Arthur, program chairman, presented the program, which consisted of vocal selections by Mrs. Don Trittico, Port Arthur, and harp selections by Mrs. George Trotter, Jr., Port Arthur.

New officers of the auxiliary were introduced by Mrs. L. R. Byrd, Port Arthur, president. In the business session the auxiliary voted to assist in the organization of an auxiliary to the Beaumont Municipal Hospital.

Mrs. W. W. Glass, Jr., Port Arthur, was hostess chairman, assisted by Mrs. D. H. Byram, Port Arthur, and Mrs. John H. Carter, Beaumont.

The work of the M. D. Anderson Hospital for Cancer Research in Houston was described by Dr. Roy C. Heflebower, assistant director of the hospital, at a luncheon meeting of Jefferson County Auxiliary in Beaumont, November 3. The program was arranged by Mrs. Dwight Curry, Port Arthur, and the speaker was introduced by Mrs. F. Peel Allison, Beaumont. Mrs. J. A. Bybee, Beaumont, gave the invocation.

During the business session Mrs. H. B. Williford, Beaumont, was appointed to be in charge of a project to secure sample medicines for the out-patient clinic at Municipal Hospital, Beaumont, a project suggested by Miss Camille Belton, head of the clinic. The auxiliary voted to change its meeting date from the first Wednesday of each month to the third Tuesday. Yearbooks were distributed.

Mrs. William A. Smith was chairman of the hostess committee, with Mrs. Fred Sutton and Mrs. W. D. Lightfoot assisting.

Fifty members and fifteen visitors were present. —Mrs. R. T. Lombardo, Publicity Secretary.

Kerr-Kendall-Gillespie-Bandera Counties Auxiliary met November 5 at the home of Mrs. Rodger Hibbard, Legion. Mesdames Charles Livingston, Judd Kirkham, J. M. Gordon, R. Hosman, George Post, and Angelo Campagna were cohostesses. Twenty-seven members were in attendance.

Announcement was made by Mrs. D. E. Packard, Kerrville, that the tuberculosis seal sale would start about November 20 and that members of the Auxiliary would be asked to assist. A countywide chest x-ray survey would be made shortly before or after Christmas. Mrs. David McCullough, Kerrville, chairman of the physical examinations committee, pointed out that members and their families were supposed to have a complete physical examination including chest roentgenogram and complete blood count within the year. Mrs. L. L. Keyser, Fredericksburg, spoke of the National Physicians Committee and urged support of it. Other reports were also given.

Mrs. E. E. Martin, manager of the Sid Peterson Memorial Hospital, Kerrville, was presented by Mrs. A. P. Allison, Kerrville, program chairman. Mrs. Martin told of plans for the building and explained its purpose, after which a social hour was enjoyed.—Mrs. D. E. Packard, Secretary.

Liberty-Chambers Counties Auxiliary held a business meeting November 10 at the home of Mrs. A. L. Delaney, Liberty. Six members and one guest were present.

McLennan County Auxiliary honored the State Auxiliary President, Mrs. S. M. Hill, Dallas, at a luncheon meeting October 27 in Waco. Mrs. Hill was the featured speaker, outlining the program for the auxiliary during the year. Thirty-seven members, three wives of physicians stationed at the Veterans Administration Hospital, and five other guests were present.

Mrs. Eldon Fine presided in the absence of the president. Hostesses were Mesdames F. F. Kirby, chairman; M. C. Carlisle, C. J. Traylor, Woodrow Avent, A. O. Manske, W. A. Wood, Neill Simpson, Ernest Johnson, H. R. Dudgeon, W. L. Crosthwait, and F. William Hoehn.—Mrs. J. R. Shipp, Publicity Chairman.

Tarrant County Auxiliary heard a talk by Mrs. S. M. Hill, Dallas, President of the State Auxiliary, at its meeting November 12 in Fort Worth. Mrs. J. A. Hallmark, program director for the day, introduced Mrs. Hill, who was honor guest at a tea following the program. Mrs. A. B. Pumphrey and Mrs. W. R. Thompson presided at the tea table.

Mrs. Hill and other out-of-town guests were complimented at a luncheon given by Mesdames W. Frank Armstrong, Pumphrey, Thompson, and H. S. Renshaw preceding the meeting.

Taylor-Jones Counties Auxiliary had a dinner meeting in Abilene on November 17 at which Mrs. S. M. Hill, Dallas, President of the State Auxiliary, was honored. Mrs. Hill, who spoke on auxiliary work, was introduced by the president of the county auxiliary, Mrs. James P. Bridges. Mrs. T. Wade Hedrick was chairman of the arrangements committee. Several paintings of Mrs. C. A. McFadden, a member of the auxiliary, were exhibited in observance of American Art Week. Forty members and several guests were present.—Mrs. Donald McDonald, Secretary.

Wichita County Auxiliary entertained Mrs. S. M. Hill, President of the State Auxiliary, at a luncheon meeting October 20 in Wichita Falls. "Activities of the Auxiliary in Texas" was the subject of Mrs. Hill's talk, which was the feature of the program for the day. She was introduced by Mrs. J. A. Johnson, president of the host auxiliary.

Musical entertainment during the luncheon was provided by Frederic Balazs, violinist, accompanied by Miss Ann Goodwin. They were presented by Mrs. W. K. Rundell, member of the program committee. Mrs. Harry Ledbetter opened the luncheon with an invocation, and Mrs. J. E. Kanatser introduced new members of the auxiliary. Special guests, including wives of physicians from North Texas and Southern Oklahoma who were in Wichita Falls for a post-graduate conference, were introduced.

Hostesses for the meeting, which was attended by approximately sixty, were Mesdames M. Zenos Smith, J. A. Johnson, W. K. Rundell, R. L. Daily, Paul Collins, K. W. McFatridge, William Rosenblatt, W. P. Lowry, and G. T. Singleton.

An address by Miss Margaret Hall, executive secretary of the Wichita County Tuberculosis Association, and contribution of miscellaneous gifts for the tuberculous patients at the county farm highlighted the program of the Wichita County Auxiliary in Wichita Falls on November 9. An informal coffee

hour with Mesdames Q. B. Lee and H. P. Ledford presiding at the silver services followed the program and brief business session. Hostesses included Mesdames J. G. Pasternack, J. R. Mast, W. L. Powers, O. H. Trimble, W. G. Harrison, John Arrington, Jack Maxfield, J. B. Nail, and W. B. Whiting.—Mrs. Joseph G. Pasternack, Publicity Chairman.

Mrs. Felix R. Collard, Wichita Falls, a member of the Auxiliary to the Wichita County Medical Society, was killed October 7, 1948, in an automobile accident. Mrs. Collard was an accomplished organist, serving the First Baptist Church and Temple Israel. She was president of the local Musician's Club, was active in the North Texas Chapter, American Guild of Organists, and was immediate past president of the first district, Texas Federation of Music Clubs. She is survived by her husband, Dr. Collard; a daughter, Mrs. A. E. Meisenbach, Jr., Dallas; two grandchildren; her parents, Mr. and Mrs. W. C. Lovelace, Tipton, Okla.; and a brother, Bryan Lovelace, Wichita Falls.

Eleventh District Auxiliary met in Tyler, October 22, joining members of the district medical society at a luncheon for which Dr. Carl Moyer, Dallas, spoke on "What It Means To Be a Physician." Members of the Tyler Kiwanis Club were also present. Following luncheon, the auxiliary met at the home of Mrs. C. E. Willingham for a business meeting over which Mrs. Paul Stokes, Crockett, District 11 president, presided. Reports were given by county presidents.—Mrs. J. M. Travis, Reporter.

DEATHS*

Dr. Nicanor Chapa, Jr., Houston, Texas, died in Monterrey, Nuevo Leon, Mexico, on July 22, 1948, of appendicitis.

DR. NICANOR CHAPA, JR.

Dr. Chapa was born January 7, 1896, in Dr. Gonzalez, Nuevo Leon, Mexico, the son of Nicanor Chapa and Juanita Chapa. He received his preliminary education at Los Herreras, Nuevo Leon, and the Colegio Civil, Monterrey, Nuevo Leon. In 1923 he was graduated from the National School of Medicine, Mexico, D. F., and began his practice in Herreras. In 1929 he practiced in Houston and Port Arthur, Texas, returning to Mexico in 1930 as a professor of internal medicine in the Facultad de Medicine de Nuevo Leon, Monterrey. He held this position for fifteen years, serving as director in 1942 and 1943. He conducted a private practice during this time and also served as chief of the department of metabolism and endocrinology in the Hospital Civil Monterrey in 1944 and 1945. Dr. Chapa returned to Houston to practice in 1945.

Dr. Chapa was a member of the American Medical Association, State Medical Association, and Harris County Medical Society. While in Mexico he had been a member of the Nuevo Leon medical association. He was interested in Malta fever and some of his research was reported in publications of the National School of Medicine of Mexico. Dr. Chapa was a member of the Catholic Church.

Surviving Dr. Chapa are his wife, the former Consuelo Francisca Chapa, whom he married December 11, 1927, in Monterrey; two daughters, Mireya Consuelo Chapa and Maria Elsa Chapa, Houston; three sisters, Celia Chapa de Gonzalez, Monterrey; Romanita Chapa de Salinas, Reynosa; and Elodia Chapa, Reynosa; and three brothers, Mauro Chapa, Los Herreras, and Juan Jose and Heriberto M. Chapa, both of Monterrey.

Dr. Walter Alton Coole, Houston, Texas, died of a heart attack October 16, 1948.

The son of William and Virginia Ella (Tipps) Coole, Dr. Coole was born October 1, 1900, at Tullahoma, Tenn. He attended San Jacinto High School, Houston; The University of Texas, Austin; Rice Institute, Houston; and Tulane University of Louisiana, New Orleans. He received his doctor of medicine degree at Baylor University College of Medicine, Dallas, in 1930. Dr. Coole served an internship as lieutenant, junior grade, in the Naval Hospital, Mare Island, Calif., and a residency in obstetrics and gynecology at St. Francis Hospital and Mt. Zion Hospital, San Francisco, Calif., before coming to Houston to practice in 1932. During World War I and prior to his college days, Dr. Coole served overseas with the Thirteenth Regiment of the U. S. Marines.

DR. WALTER A. COOLE

*An obituary ordinarily will not be published more than four months after date of death. Cooperation in reporting deaths of physicians and in furnishing appropriate biographical material promptly is solicited.

Dr. Coole was an active member of the Harris County Medical Society for sixteen years and held several offices, including those of secretary in 1938 and of vice-president in 1942. Through this society he was a member of the State Medical Association of Texas and the American Medical Association. A member also of the Post Graduate Medical Assembly of South Texas, he had held the offices of president and secretary in this group, was on the editorial staff and a member of the board of publication of *Medical Record and Annals*, and contributed a number of articles to medical journals. During World War II he served in Houston as chairman of the medical advisory committees for American Red Cross First Aid and the Nurses Emergency Corps, and as executive secretary of the Committee on Emergency Medical Service for Civilian Defense. Dr. Coole was an instructor in nutrition at the Texas Dental College, Houston, from 1940 until 1943. He had been a member of the health committee of the Houston Chamber of Commerce and secretary of the board of directors, Houston Academy of Medicine. He was a member of the First Christian Church.

Surviving Dr. Coole are his wife, the former Miss Edith Chapman, whom he married July 26, 1935; two sons, Walter Alton Coole, Jr., who is in the army, stationed in Japan, and Cary Walton Coole, Houston; and a daughter, Edana Coole, Houston.

Dr. Claude B. Leggett, Abilene, Texas, died in a local hospital October 25, 1948, of cerebral hemorrhage.

The son of Riley Benjamin and Rachel Leggett, Dr. Leggett was born near Hallettsville, Lavaca

DR. CLAUDE B. LEGGETT

County, Texas, March 3, 1880. He attended county rural schools and summer normal schools and spent four years as a teacher before beginning the study of medicine. He attended the University of the South, Sewanee, Tenn., and was graduated from Southwestern University Medical College at Dallas in 1905. He later completed postgraduate courses at Bellevue Hospital and the Eye, Ear, Nose and Throat Infirmary, New York, and at Tulane University, New Orleans; and further studies in Denver, Philadelphia, Dallas, and Houston. Dr. Leggett began his general medical practice in Eastland County in 1905 and was at Gorman and Desdemona before moving to Abilene in 1915. Here he devoted his practice to diseases of the eye, ear, nose, and throat until his retirement from active practice because of ill health in 1945. He was associated for several years with the late Dr. W. J. Mathews, Abilene.

During most of his professional career Dr. Leggett was a member of the State Medical Association of Texas and American Medical Association, first through Eastland-Callahan Counties Medical Society and then through Taylor-Jones Counties Medical Society, of which he was a past president. He was elected an honorary member of the State Medical Association in 1946. He had been a member of the board of trustees for Abilene Christian College and was a member and a former officer of the College Church of Christ.

Dr. Leggett is survived by his wife, the former Miss Dee Garner of Ezzell, whom he married in 1905; a daughter, Mrs. Roy S. Mack, Slaton; a son, Carlos S. Leggett, Abilene; five brothers, Theo Leggett and R. B. Leggett, Houston; Volney Leggett, New York; Guy Leggett, Harlingen; and Eugene Leggett, San Benito; two sisters, Miss Ima Leggett, San Antonio, and Mrs. W. C. Wilson, Runge; and two grandchildren.

Dr. James P. McAnulty, San Angelo, Texas, died November 12, 1948, at a local hospital.

Born March 3, 1887, in Henderson, Rusk County, Dr. McAnulty was the son of Jamerson Monroe and Nancy Elizabeth (Mays) McAnulty. He attended Trinity University, San Antonio, from which he received his bachelor of arts degree in 1907, and the

DR. J. P. McANULTY

University of Texas Medical Department, Galveston, from which he received his doctor of medicine degree in 1911. Soon after graduation he moved to San Angelo and began his practice. On December 9, 1917, Dr. McAnulty entered the U. S. Army Medical Corps at Fort Riley, Kan., and served as a lieutenant with the Thirty-Fifth Division in France for twelve months. He was discharged in June, 1919, with the rank of captain. During World War II, Dr. McAnulty served as examining physician of Tom Green County Selective Service Board 1 for four years. Dr. McAnulty was one of the founders of the San Angelo Medical & Surgical Clinic, and had served on the medical board and as chief of obstetrics and pediatrics at the Shannon West Texas

Memorial Hospital for many years. He was also a director of the Chain Investment Company.

Dr. McAnulty was a member for thirty-four years of the American Medical Association and State Medical Association, first through the Galveston County Medical Society and then the Tom Green Eight County Medical Society, to which he was elected an honorary member in 1948. He was also elected in 1948 to honorary membership in the State Medical Association. He served as chairman of the Section on Obstetrics and Gynecology at the annual session of the State Medical Association in 1944. He had assisted with the Mothers Health Center in San Angelo, was a member of the Tom Green County Tuberculosis Association, and had conducted lectures at the Shannon School of Nursing. He was a fellow of the American College of Surgeons and for some time served as district examiner of candidates. Dr. McAnulty was a member of the Presbyterian Church and a past president of the San Angelo Country Club. He was a spectator sports enthusiast and his chief hobbies were golfing and hunting.

On April 15, 1914, at Farmersville, Dr. McAnulty married Miss Mary C. Aston, who survives. Also surviving are a niece, Mrs. James C. Landon, Jr., and Miss Ruth Aston, sister of Mrs. McAnulty, both of San Angelo.

Dr. William Grady Mitchell, San Angelo, Texas, died October 8, 1948, while visiting his brother in Seattle, Wash.

Dr. Mitchell was born July 17, 1896, in Bedford, Franklin County, Va., the son of Lewis Pinkney and Nancy (Brooks) Mitchell. He attended public schools in Virginia and Ohio and was graduated from the University of Tennessee College of Medicine, Memphis, in 1921. After serving a two year internship

DR. W. GRADY MITCHELL

at the Philadelphia General Hospital, he practiced in Philadelphia until 1929 at which time he studied cardiology at the University of Pennsylvania, Philadelphia, and took a course in gastro-enterology and roentgen ray at the Philadelphia General Hospital and the Pennsylvania Hospital. He then studied six months in Munich and Leipzig, Germany; Vienna; and St. Thomas, London. Further postgraduate study at the University of Pennsylvania and the Philadelphia General Hospital followed in 1930, and Dr. Mitchell served as assistant physician in the department of cardiology at the Pennsylvania Hospital and at the Philadelphia General Hospital from 1930 until 1935. He was also physician to the Pennsylvania Hospital and instructor in medicine at the University of Pennsylvania from 1933 until 1935 when he moved to San Angelo to practice internal medicine and cardiology.

Dr. Mitchell served in both World War I and II. During World War II he served with the Navy in the rank of lieutenant commander, first as head of the medical department, U. S. Naval Hospital, Paris Island, S. C., in 1940; then as chief of medicine and cardiologist, U. S. Naval Hospital, Corpus Christi, and consultant in cardiology to the U. S. Naval Air Station, Corpus Christi, in 1941 and 1942; the next fourteen months as chief of medicine and cardiologist, U. S. Naval Mobile Hospital No. 3, Tutuila, American Samoa; and then as head of the department of cardiology, U. S. Naval Hospital, Shoemaker, Calif., until his discharge in November, 1944. Dr. Mitchell resumed his practice in San Angelo where he was director of the clinical laboratory, St. John's Hospital. He was also associated with the Shannon West Texas Memorial Hospital, being consultant in internal medicine, instructor of internal medicine at the Nurses' Training School, and at the time of his death, a member of the medical board of the hospital.

A member throughout his residence in Texas of the Tom Green Eight County Medical Society, State Medical Association, and American Medical Association, Dr. Mitchell was secretary of his county medical society in 1945 and president in 1946. He was a member of the American Heart Association, Texas Heart Association, Southern Medical Association, and a fellow of the American College of Physicians. He was a member of the First Presbyterian Church, Masonic Order, Shrine, and Kiwanis Club.

In June, 1923, Dr. Mitchell married Miss Mary B. Bradley. He is survived by his wife; two sisters, Miss Lola Mitchell, Chicago, and Mrs. Marvin Karnes, Columbus, Ohio; and two brothers, E. Radford Mitchell, Seattle, Wash., and John Mitchell, Dayton, Ohio.

Dr. Hewell Coleman Samuel, Carlsbad, Texas, died October 20, 1948, in Shannon Hospital, San Angelo, from a gunshot wound.

Born August 11, 1913, at Talladega, Ala., Dr. Samuel attended Birmingham-Southern College, Birmingham, Ala., from which he received a bachelor of science degree in 1935, and the University of Alabama, University, Ala., from which he received his master of science degree in 1937. He obtained his doctor of medicine degree from Tulane University School of Medicine, New Orleans, in 1941. Prior to the completion of his medical education, he served as an instructor in chemistry at the University of Alabama. Dr. Samuel joined the staff at the State Tuberculosis Sanatorium, Carlsbad, Texas, in 1941 and was on the staff, except for fifteen months spent in Baytown and Texon, until 1946, when he joined the staff of the McCloskey Hospital, Temple. He returned to the State Sanatorium in 1947 and was on its staff at the time of his death. He was appointed assistant superintendent in 1945 and returned to that position in 1947.

Dr. Samuel was a member of the American Medical Association through the State Medical Association of Texas and Tom Green Eight County Medical Society. He was a fellow of the American College of Chest Physicians and a member of its Texas Chapter. He was also a member of the Methodist Church.

Dr. Samuel is survived by his wife, the former Miss Wilma Dickinson, Houston; a son, James Henley Samuel, III; his father, James H. Samuel, Talladega, Ala.; and a brother, Lt. Col. M. B. Samuel, stationed in the Hawaiian Islands.

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